The Builder.

VOL. LXIX. NO. 2751. OCTOBER 26, 1895.

ILLUSTRATIONS.

Staircase Hall, Gosford House.—Mr. William Young, F.R.I.B.A., Architect ..... *Extra Large Page Ink-Photo.*
"Teith View," near Doune, N.B.—Messrs. Niven & Wigglesworth, Architects ..... *Double-Page Photo-Litho.*
A Small Town House.—Mr. H. F. T. Cooper, Architect ..... *Single-Page Ink-Photo.*
Proposed Business Premises.—Mr. F. B. Cooper Architect ..... *Single-Page Ink-Photo.*

Blocks in Text.

Figure from the Advertisement of *The Quest* ..... Page 291
Heraldic Window in the New Mitchell Hall, Marischal College, Aberdeen ,, 293
Plan of Gosford House ..... ,, 296
Plan of "Teith View," N.B. ..... Page 296
Church at Repton, Derbyshire ..... ,, 297
Plan, Proposed Business Premises ..... ,, 297

CONTENTS.

Bricks, Tiles, and Terra-Cotta 287
Notes on Pre-Conquest Architecture in England III. 288
Notes 290
American Opinion on Architectural Education 291
Heraldic Window at the Mitchell Hall, Aberdeen 293
The Turners' Company Exhibition 293
A New Artificial Stone 294
The London County Council 294
Books: "R. C. Glen's and A. A. Bethune's "The Law Regulating Streets and Buildings in the Metropolis"; E. de V. Buckingham's "Contractors' Price-Book for 1895"; E. S. Roscoe's "A Digest of the Law of Light"; A. Greenwell's and W. T. Curry's "Rural Water-supply"; H. Fishwick's "Popular County Histories—Lancashire"; F. T. Elworthy's "The Evil Eye"; M. Stokes' "Three Months in the Forests of France"; J. T. Perry's "Bye-way History" 294
Trade Catalogues, &c. 295
Gosford House 296
"Teith View," Doune, N.B. 296
A Small Town House 297
Proposed Business Premises 277
Church at Repton 297
Architectural Societies 297
Student's Column: Metals used in Building.—XVII. 297
General Building News 298
Sanitary and Engineering News 300
Foreign and Colonial 300
Miscellaneous 300
Legal 301
Meetings 302
Recent Patents 302
Some Recent Sales 303
Tenders 303

*Bricks, Tiles, and Terra-Cotta.**

THIS is the only large book in the English language on the subject of which it treats. That it has reached a third edition shows it was wanted, though we cannot say it comes up to the standard of what, from our view, a text-book should be. This edition has been revised, and, in great part, re-written; so much matter has been added that it may almost be regarded as a new work.

After dealing with the history of brick manufacture, and giving some account of the nature and constitution of clays for bricks, paving-bricks, fire-bricks, and porcelain, the author states the usual methods adopted in making and burning hand-made bricks, and details the manufacture of tempered-clay bricks, including a description of the most modern machinery employed, the manufacture of street paving, dry-clay bricks, pressed and ornamental bricks, divers types of kilns, their mode of construction and relative quantity of fuel required, the manufacture of fire-bricks, gas retorts, enamelled bricks, sewer-pipes, drain-tiles, architectural terra-cotta, ornamental and roofing tiles, and the manufacture of mosaics and imitation inlaid and intarsia surfaces.

Commencing with the history of brick-making, there are sundry extracts from Holy Writ mixed up with particulars concerning the Washington Monument; and modern machinery *versus* hand methods of making bricks prefaces observations on ancient Egyptian bricks and pyramids. The Egyptian section is cut in two by the interposition of observations on what is called Babylonian brick. We do not gather that this part contains anything in the nature of original research by the author, though from the style of the writing it might be imagined that most of the information given was new. Beyond crediting "Layard" and Sir Henry Rawlinson with two minor statements, there is practically no acknowledgment as to the source of the somewhat lengthy particulars on Oriental bricks. Indeed, the book generally is sadly wanting in references to authorities from whose works the author has palpably quarried to a large extent. The titles of kings and the dynasties to which they belonged, and many other remarks set forth in the most categorical manner in that part dealing with ancient Nile brickmakers, indicate that the author has yet much to learn respecting modern Egyptology. A sudden leap is taken from the Great Wall of China (211 B.C.), to Spanish-American buildings in California. It is stated that the use of sun-dried bricks has more or less continued in some parts of Spain to the present day, though why that country should have been specially selected it is difficult to say: sun-dried bricks are quite commonly used in many out-of-the-way places in Europe and North Africa. We subsequently leave New Mexico and Arizona for Ancient Greece, the walls of Athens and Mount Hymettus, and it is stated that "the use of bricks for architectural construction was never, at any period, extensive in Greece, but in some few cases they were employed in minor public edifices." Our author is loud in his praise of Roman bricks, and leads us to believe that the Romans adopted the art of brick-burning for the purpose of "embellishing" the Imperial city. It is common knowledge that when the time for the "embellishment" of the city came, the Romans covered up the more prominent parts of the brick-work (especially in interiors) with marble and stonework—at least in the more important edifices. Had the author contented himself with stating simply that both in the Imperial city and other parts of the Empire the Romans extensively used bricks burnt in kilns, he would have been nearer the mark. Still proceeding with the subject of Roman bricks, we are interrupted by the following characteristic observation:—"If Pliny could see some of the brick now used, he would quake for the safety of the occupants of some modern hotels, apartment-houses, office-buildings, and dwellings that have recently been erected for speculative purposes in London and some portions of this country." Yet, we may remark, Pliny could not have been altogether ignorant of such jerry-building substances, for he expressly states that the bricks made in Greece in his time were very inferior, and "not fit to be used in the construction of a Roman dwelling, that no party-wall was allowed to be more than 18 in. in thickness, and that the material would not support one story." Referring to the history of bricks in England, we are told that after the Great Fire of London in 1666 brick was the material *universally* used in the reconstruction of the city, which is, of course, absurd in view of Wren's works. Dutch bricks next claim attention; and the chapter ends with a flourish of trumpets extolling American materials, in the midst of which we are calmly asked to believe that "at the present time, both for quantity and quality, we (*i.e.*, Americans) have no equal in any nation of the world," and so on. The only clay that will make bricks, apparently, is found in the United States, the only machines for brickmaking are of American manufacture, the only kilns of any use are from Buffalo, St. Louis, &c., and the only people who understand brickmaking are in America. Stay; there is an English kiln expatiated upon, the Dunnachie, "for which Charles T. Davis, of Washington, D.C., is the agent in the United States." We wonder the author had the impertinence to insert the words last quoted.

But in spite of all this nonsense, which may fairly be attributed to a prevalent Transatlantic weakness, the book is useful. The "science" in it is of a very low order, it is true, and from the manner in which the various machines are paraded, the reader finds some difficulty in grasping the fact that the work is not a manufacturer's descriptive catalogue for advertisement purposes. If we were to shear the book of any pretensions of being more than a manual on American brick-making plant and machinery, we might be nearer the truth than in dubbing it a general "text-book." The statements in it are not presented in any order except in a rudimentary manner, as may be gathered from what we have already said.

To continue: we next approach the subject of the constitution and fitness of clays of different kinds for making bricks and terra-cotta. The author states that in geological works clays are divided, in accordance with their occurrence, into primary and secondary deposits, which is news to us. Again, clay "in the past has been deposited in the depressions on the earth's surface, and in changes due to the unstable condition of the earth's crust was subjected to heat and pressure and became consolidated, forming a true rock." Thus we are asked to believe that, in being made into a more or less solid material, it is essential for the clay to be subjected to metamorphic action as exemplified by heat and pressure. It is a hopeless

* "A Practical Treatise on the Manufacture of Bricks, Tiles, and Terra-Cotta." By C. T. Davis. Third edition. 1895. Philadelphia: Henry Carey, Baird & Co.; London: Sampson Low, Marston & Co., Limited.

jumble of facts twisted by unscientific hands into a meaningless sentence; the author evidently does not understand what he is writing about. There is a great deal more of a pseudo-geological nature in the work, but we shall not refer to it—it is beyond criticism.

That part dealing more particularly with the ingredients of common clays and their effects in the kiln is better, though we cannot quite agree that the silica furnished by sand is *necessary* in order that a partial fusion of the materials may take place. Such fusion can be, and often is, brought about without any free silica being present in the raw materials of which bricks may be made. Again, at first sight, one might imagine from what is said, that the addition of free silica causes the whole clay to fuse. As a matter of fact, silica, *per se*, is practically infusible, though it melts in presence of a suitable flux such as is frequently found in clays. On the whole, however, the information concerning the suitability of divers clays for making bricks is good, though the author has not always a happy way of putting it. Here is a sentence: "Salt melts readily and glazes the outside of the brick, and the heat cannot be raised or maintained sufficiently long to burn them to the core, or into good hard brick." Anyone can see what the author means, but the words are badly strung together.

Clays for building-bricks are divided into three classes: 1, Plastic, or strong clays, chiefly silicate of alumina; 2, loams and mild clays, where there is a considerable proportion of sand mixed; and 3, marls, or calcareous clays containing a notable quantity of carbonate of lime. As a general rule, says the author, a clay fit for the manufacture of a first-class quality of building brick is not met with in Nature. There is almost always a deficiency of sand and lime. A good brick clay is one that contains sufficient fusible elements to bind the mass together, but not so much as to make the bricks adhere to each other or become vitrified. Such clays contain from 20 to 30 per cent. alumina, and from 50 to 60 per cent. silica, the remainder consisting principally of carbonates of lime and magnesia and oxide of iron. That is very well put, but it should have been added that the proportion of the carbonates and the oxide alluded to should not pass a certain limit. For instance, suppose a clay contains alumina and silica to the extent of 70 per cent. (which is permissible by the statement made), it would never do to have the remaining 30 per cent. of iron alone, or carbonate of lime alone, though in Switzerland they make a fair brick with a high percentage of lime, which they are enabled to do by reason of certain peculiarities in the other ingredients of the raw earth used. A building brick could be made even with a higher percentage of lime, but it would, in the majority of cases, be a very inferior one.

A great deal is made of the chemical composition of the divers earths described in the book, and the author endeavours to show the connexion between that and the effects produced in the kiln under high temperatures. It is admittedly a difficult subject, and we think this part of the work is excellently done; clearly the author has had a great deal of experience either in the laboratory or in the brickfield with the behaviour of clays under differing temperatures. The relation of the structure of clays to their chemical constitution, and the combined effects of these two properties in the kiln, is not adverted to, except in a rough way. Some day, when the structure of clays is more generally understood, it will be found to be an essential factor in the value of the earths for brick-making.

In the section devoted to "drying" bricks preparatory to their being placed in the kiln, the author gives the following instructions:—"The first step in the drying of hand-made bricks is to turn those upon edge that were made on the previous day. If there are no indications of rain, the bricks are 'turned up' early in the morning, and allowed to stand upon edge, exposed to the sun, until about four o'clock in the afternoon, when they are taken into the drying-shed." We do not know how it may be in America, but if bricks were attempted to be dried in that fashion in England they would not be worth putting into the kiln. The author is not very particular with some of his statements on these preparatory stages. For instance, we are told that "washed bricks" (*i.e.*, those accidentally exposed to rain before having been well-dried, or burned) have a rough appearance, and are generally not much esteemed, "but they make the strongest brick that come out of a kiln; and when hard-burned, they have no equal for foundation or sewer-work." That may be with some earths, but it cannot possibly be applied to all that are capable of holding together in the rain.

We have nothing but praise for the section dealing with "burning"; it is the best dissertation we have seen on the subject. Passing over that part wherein a large number of brick-making and other machines used in clay-work are described in detail, and on the construction of kilns, our attention is arrested by observations on drain-tiles, which are also very good. With reference to drying drain-tiles it is remarked that different clays require different methods of drying, for, whilst some tile-clays are so tough as not to dry properly in the sun, others are so tender that it is difficult to dry them in the air. It is the lack of uniformity and the employment of too high a temperature at first in drying, and not the rapidity with which the tile is afterwards dried, that in most cases causes the tile to crack. Drying the surface too rapidly will crack the green tile, for the reason that the centre of the tile is raw, and does not shrink as rapidly as the surface.

The author starts badly in the chapter devoted to the manufacture of architectural terra-cotta. He says that "terra-cotta is to-day the most available material used for the construction of buildings of all classes and forms." Whatever merits terra-cotta may possess, we have never heard it specially praised before on account of its "availability." In general, it does not seem to be particularly "available," at least, "jobs" are very frequently kept waiting about for it. Although it is admitted that the use of terra-cotta dates from remote antiquity, it is amusing to note that "brick was the building material of the antediluvian days." Skipping the parts in which terra-cotta is strongly recommended for "ornamentation," and so forth, we note that the author classifies terra-cotta into (1) its fitness as a substitute for stone, &c., and (2) as a building material pure and simple. He insists that some architects are too exacting in ordering terra-cotta. "They would select a chip of natural stone, and demand that the clayworker do an impossibility, viz., reproduce that exact shade of colour." The proper use of terra-cotta demands (1) moderate size of pieces, (2) easy manipulation of the surfaces, (3) consideration in the construction, (4) protection of the exposed joints, and (5) freedom of shade in colour. It might have been added that a careful consideration of the "filling" is essential. The process of manufacture is subsequently described, and some account of ornamental and roofing tiles brings the book to a close.

NOTES ON PRE-CONQUEST ARCHITECTURE IN ENGLAND.

By Professor Baldwin Brown.

III.—*The Place of Saxon Structures in the General History of Mediæval Architecture.* Part I.—*The Basilican Plan and its Modifications.*

In the first of these papers a glance was taken at some of the principal varieties of plan observable among Saxon churches, and there now arises the question—how are these plans related to the normal forms of Mediæval buildings, as they appear in the successive ages of Western architecture? Various types of ecclesiastical buildings show themselves in our own country during the Saxon period, and it is a mistake to treat them, as they are too often regarded, as isolated phenomena, without any relation to similar forms appearing in other lands. We require to know where to place our Saxon buildings in the general process of the evolution of the architectural forms of the Middle Ages. In most cases there are parallel examples either on the Continent or in other parts of our own islands, and without a reference to these we cannot properly know our native English work. Such reference and comparison are especially valuable when it comes to questions of date. The dates of Saxon buildings are matters of never-ending discussion, which is too often carried on without due use of the method of comparison. Certain types of building belong to particular periods of Western architecture in general, while at other periods the same types would be practically impossible. Now, warm-hearted enthusiasts often claim for Saxon structures an origin in epochs when they would have been little less than miraculous. When a specially remote date is suggested for this or that specimen of pre-Conquest building, it is surely advisable to ask whether, at the period in question, forms of the kind were recognised in Western architecture as a whole. In this comparatively outlying region of the West, we can hardly expect that designers of buildings would have been far in advance of their brethren in the greater centres of European culture. It is true that we find in the architecture of Saxon England certain peculiar forms unknown on the Continent, and due to the fact that the British Isles were only in part Romanised; it is true, also, that descriptions of some famous Saxon buildings exhibit them as fully in line with, and even at times leading, the advance of Western architecture in general. It would be a mistake, however, to exaggerate this, and to credit the Saxon designers with revolutions in the art of church-planning, or with the erection at one stroke of forms centuries in advance of their time. There must, in the nature of things, be a certain parallelism between work here and elsewhere, and if we can establish a normal scheme of development in the architectural forms of Western Christendom, we shall have laid the soundest possible groundwork for settling some of these disputed questions about the date of pre-Conquest churches.

Taking, then, the forms of Saxon buildings in order, we may note that between them and Continental structures there is a broad distinction residing in their square terminations at the altar end. Abroad, throughout the Romanised West, nearly all early Christian and early Mediæval churches are apsidal. The square-ended choir appears later on, under the influence first of the Cluniac revival in the tenth century, and next of the Cistercian movement in the twelfth, but is pretty well confined to churches erected in these connexions. In England, however, some of the earliest Saxon churches, such as Escombe and Bradford-on-Avon, are square-ended, and all through the pre-Conquest period the apse is the exceptional form. This points to a non-Roman origin for a large number of our early churches, and opens up the question of Celtic influence. The almost constant absence of side-aisles, the great proportionate height of the walls and steepness of the gables, as at Monkwearmouth, and the comparative narrowness, are also unclassical in appearance, and give to the study of our early churches a special interest that is often lost sight of by writers who are too ready to call them "basilicas," or to assume that the designs of them were derived from Rome. These abnormal or non-Roman features of our early architecture will be discussed, in connexion with the subject of Celtic influence,

in a subsequent paper. At present we will regard only those features which are Classical in their origin and character, such as the basilican plans, and will ask what light is thrown on native work by a comparision of it with what was being produced in the Continental schools.

In order to fix the position in Western architecture of Saxon buildings, it will be convenient to glance for a moment at the general course of evolution by which the Mediæval styles were formed. In the Early Christian architecture of the West the one standard form for churches used for congregational assembly was the basilica, though it was by no means the only form known to Christian builders. The word "basilica" was often used by early writers in a loose sense to mean any kind of church, but in its proper significance it applies to the spacious, broad, comparatively low edifices, very simply constructed, divided into nave and side-aisles, lighted by a clearstory, and terminated at the altar end by an apse, of which the most characteristic examples remain to us at Rome and Ravenna. Now, this Early Christian basilica has been made to do more than its fair share of work in the development of ecclesiastical architecture. It has been assumed that the basilica and a few centuries of time were all that was needed for the production of the Romanesque church of the Later Middle Ages, but the truth is, that the basilica, when taken by itself, was strangely lacking in the necessary principle of growth. The Romanesque church derived from the basilica the main scheme of its rectangular plan, its division into nave and aisles and clearstory lighting, and its apsidal termination, but for its other main characteristics, such as stone vaults, the use of pillars instead of columns in arcades, transepts, a choir as the extension of a nave, the central pavilion or tower, galleries over side aisles, façades composed with a tower or towers, and the like, we have to look to other buildings than the basilicas. It is not too much to say that the supposed progressive modification of basilican forms, by which Romanesque architecture is commonly explained, is really a figment of historians. The Romanesque style depended for its formation, not on the modification of the basilica from within, but on the grafting on the simple basilican scheme of more elaborate architectural features that originated elsewhere. The source of these is to be sought in the round or polygonal and the cruciform churches that were erected from the earliest times, not for worship, but for memorial or sepulchral purposes, or simply as baptistries. These exceptional buildings show from the first far more architectural character than the basilicas. Their plans are more complicated, but, at the same time, more compact, their technique more advanced, their construction more daring and masterly.

Buildings like San Lorenzo at Milan, San Vitale at Ravenna, and Charles the Great's sepulchral church at Aachen, contain all the constructive and artistic elements that in different combinations make up the Romanesque church. They exhibit, first, a central space with a side (or rather concentric) aisle, vaulted itself and carrying a vaulted gallery opening into the central space, which is also covered with a dome in masonry. Access to the gallery is gained by stairs in stair-turrets, and these, at San Vitale and at Aachen, are grouped on each side of an entrance-porch, thus prefiguring the most characteristic feature of the Romanesque elevation. At San Vitale we find even that special mark of advancing Romanesque, the rectangular choir or chancel preceding the apse.

Here there are most of the characteristic features of Romanesque architecture, and all that the Mediæval builders had to do was to combine these with the rectangular plan, which was the contribution of the basilica. When and where the necessary steps were taken it is impossible, in the present state of knowledge, to say. It is clear that the basilica in itself contained no principle of growth, or we should be able to trace the beginnings of Romanesque at Rome and at Ravenna. At Ravenna, however, the basilica maintains throughout its simplest fundamental form of nave and side aisles, with apse opening directly into the former, and the latter unprovided with galleries. At Rome certain innovations on the bald basilican form make their appearance, but in such a way as to show that they were rather accidents than stages in a progress. Many of the earliest Roman basilicas, especially those of the larger kind, show a rudimentary transept in the form of a clear space across the church just before the apse. So far, however, from this becoming a normal feature and leading on to the more complex Romanesque plans, it actually dies out of Roman architecture altogether, and the later basilicas of the metropolis never show it. Similarly, we find at one particular period of the history of the Roman basilica, the gallery introduced over the side aisles. This is not, however, a symptom of incipient Romanesque, but a passing fashion, introduced probably from the East, which made no permanent impression on the basilican plan.

It is curious, indeed, to note how unprolific in new architectural forms were the builders of Rome herself during the Early Mediæval period. Rome, the mother of ecclesiastical statescraft, was in matters of art the most unproductive of all the centres of the West. As her architects had constructed in the fourth century so they continued to build in the twelfth and thirteenth, and after one solitary attempt at Gothic at Sta. Maria Sopra Minerva, the Early Christian style passed at once into that of the Renaissance. This is a fact to be remembered when we find Mediæval writers speaking of Rome as a place of architectural inspiration. For the seats of the new experiments in construction and planning which transformed the Early Christian into the Mediæval style, we should probably be right in looking away from Rome altogether to the more northerly districts of Italy, the metropolis of which is Milan, and beyond the Alps to centres like Cologne, or Tours, or our own York. Here classic and barbarian elements of culture met and mingled, and though there may not be anything specially Teutonic in the forms thus evolved, it may well have been the case that the contact with new social forces embodied in the Northern peoples stimulated inventive genius in the *alumni* of the older schools. The centuries from the sixth to the ninth must have been in this respect of great importance, and it is a matter of some national pride to find that, in one conspicuous instance, the church built by Wilfrid at Hexham at the close of the seventh century, our country was doing its full share of work in the formation of the Mediæval styles. Until the age of Charles the Great, however, our knowledge of what was going on is fragmentary and obscure, and in the great dearth of monuments the date of which can be fixed, is chiefly derived from literary sources.

There are several of our Saxon churches that may fairly lay claim to an origin in this early period, and in their case it is interesting to note what modifications they exhibit of the simple Early Christian plans. Silchester seems to present to us a fairly normal Early Christian design on a very small scale, and there seems no reason to doubt that it is Romano-British, and represents with St. Pancras at Canterbury the oldest tradition of church-building in the country. On the other hand, in two somewhat later examples of the basilican plan, in the churches of Reculver and Brixworth, we discern some modifications that look on to Mediæval days. In both these buildings the apse does not follow immediately on the nave, but is preceded by a sort of square chancel, cut off from the nave by an archway or group of three-arched openings. At Reculver (fig. 7)*

* See page 216 *ante* for the plans of churches referred to.

the arches of these openings were carried in the centre on two columns of Roman workmanship, and started at the sides from piers that are constructed of Roman brick. Whether these arches with the wall above them originally formed part—in all probability the porch—of some Roman building, or whether it is only the materials that are Roman, we cannot tell. The fact that this part of the masonry accords with the orientation of the church, would suggest that the materials were put together for Christian use, and the fact that a similar screen between nave and chancel seems to have existed at Brixworth bears out this supposition. The feature is a curious one, and does not occur, at least in the West, in any known Early Christian Church on the Continent. It seems to contemplate a separation between nave and sanctuary that is rather Oriental than Western, and rather Mediæval than Early Christian. One might be tempted to ascribe it to the inability of the masons to turn a single arch of the needful span (at Reculver 20 ft., at Brixworth 25 ft.), and we may note that the same contrivance of three arches in the place of one occurs at the chancel opening of the Saxon church of Bracebridge, near Lincoln, and the opening to the church of the Early Norman tower at Jevington, Sussex. On the other hand, the apse at Reculver, if finished in the Roman fashion, would have required a vault 25 ft. in span, compared with which a single arch 20 ft. wide would have been a simple matter. (How was St. Pancras roofed? The walls are only 2 ft. thick, and there is no sign of the piers of an arch in front of the apse.) The spaces at Reculver and Brixworth, within the screens but before the apse, are more important than the screen itself. Brixworth is claimed by many as Romano-British, and so excellent an authority as Mr. Romilly Allen, in his valuable "Monumental History of the British Church," says that it "may be taken as the best typical example of a Saxon Church most nearly approximating to the Roman pattern." The distinctly marked chancel is, however, a feature not found in any basilica at Rome or at Ravenna. It may be a modification of the transept-like space observable in several instances at Rome, but it looks much more like an approximation to Mediæval planning. The space at Reculver is much smaller, and bears out the view that the church belongs to an earlier date than its Northamptonshire sister. There are many other points about Brixworth well worthy of discussion, for which there is no space here. It is sufficient to have noted that even in our most "Roman" churches there are features which in the light of the comparative method are seen to need study and elucidation. The fact that pillars instead of columns are used to divide nave and aisles is to be noted, as the pillar basilica is an innovation on the earlier columned form. In this county, however, it would be an almost necessary consequence of the absence of the marble column shafts which were so abundant in early Christian times in Italy.

Some early Saxon buildings, however, showed far more important modifications of traditional Early Christian forms than those just discussed. The most interesting monument of the kind is Wilfrid's church at Hexham, which is known to us from the accounts of several writers, the earliest of whom was his own chaplain, Eddius. They all agree in representing it as exceptional in size, solidity, and excellence of workmanship, and it seems to have specially struck observers for the multiplicity of its parts. We read of its three distinct stories of interior elevation (an arrangement Mediæval but not early Christian), of long passages and galleries, approached and joined by winding staircases in towers; of numerous side-chapels, porches, and oratories; of crypts and underground chambers constructed wondrously of smoothed stonework. This all sounds very unlike one of the simple, slight basilican structures of Rome or

Ravenna, splendid in its decoration, but without any architectural pretension save that based on its imposing size, and it is unfortunate that the term "basilica" is so often applied to Wilfrid's edifice. Mr. C. C. Hodges states that "it appears that Wilfrid's church was designed on the model of the great basilican churches of Rome," and quotes William of Malmsbury, who tells us that Wilfrid's masons came from Rome. For "Rome" we should certainly read here "Romanised lands," for not only was Rome, as we have seen, by no means a source of architectural inspiration, but stone masonry was not a Roman art. All the early Christian buildings in Rome are of brick, not of stone.

To call Wilfrid's church at Hexham a basilica is to obscure the most interesting point about it. It was not a basilica, but a building far more resembling such an Early Romanesque church as St. Pantaleon at Cologne, where there are transepts, galleries over the side-aisles, towers with stairs of access, the "three stages of interior elevation," *i.e.*, ground story, triforium, and clear-story, and the like. St. Pantaleon, however, dates, at the earliest, from the end of the tenth-century, and Wilfrid was building at the close of the seventh. It would be hard to say where in Western Europe one would look to find another instance of so advanced a building at that epoch. The church on the plan of St. Gall, of about 820, is certainly not so far developed. It is cruciform in plan, but there is no sign of galleries or of stair-turrets connected with the main building, no room for ascending and descending passages. It is not to be overlooked that Wilfrid built another church at Hexham, of the central type, rising like a tower, and polygonal in form (*fere rotunda*), with four adjuncts giving a cruciform character to the plan. This shows that his attention had been directed to central churches, and he must have become familiar with the more advanced constructional features presented by churches like San Lorenzo and San Vitale when compared with the Basilicas. It is quite possible that he or his advisers may have made a real step in advance in an endeavour to graft some of these features on the basilican scheme. This same process we know to have been going on in the Carolingian period, which is generally held to mark the beginning of Romanesque as distinct from Early Christian architecture. It is an important fact in architectural history that Wilfrid was doing the very same thing more than a century earlier, and we may claim for Wilfrid's northern diocese a place among the localities where this architectural history was made.

NOTES.

IT is announced that Mr. W. R. Lethaby will deliver two lectures on "Modern Building Design," in connexion with the work of the Technical Education Board of the London County Council. The lectures are to be given at the Central Art Department of the Board, Bolt-court, Fleet-street, on Saturdays, October 26 (to-day) and November 2, at 3.30 p.m. The lectures are specially addressed "to architects and architects' pupils." We presume this is the first foreshadowing of that scheme for architectural teaching to be organised by the London County Council, to which reference was made by Mr. Caröe in his Presidential address at the Architectural Association the other day. Whatever we may think of the scheme in a general sense, there is no doubt that we shall all of us be very glad to hear what Mr. Lethaby has to say.

THE Glasgow Architectural Association has offered a prize of five guineas, open to all members of the Association, for the best essay on "The Distinctive Qualities of Scottish Architecture." This is a very interesting subject, which has perhaps hardly received sufficient attention, having been only touched on occasionally in a partial and desultory manner by writers on architecture. The castellated architecture of Scotland has received systematic illustration at the hands of Messrs. M'Gibbon and Ross, but it is in ecclesiastical architecture that Scottish peculiarities are most distinctly marked, and this part of the subject has hardly been sufficiently followed out and illustrated. It is to be hoped that the essay to which the prize (not a very large one), is awarded will be a valuable contribution to architectural criticism.

THE Purcell celebration at Westminster Abbey is to be held on November 21, and its proceeds will be given towards a new case, designed by Mr. Pearson, R.A., and estimated to cost 2,000*l.*, for the organ, which was originally built by Schneider and Jordan in 1730, and presented by George II. The *Daily News* announces the recent discovery by Professor Bridge, in the Muniment Room, of an order by the Dean and Chapter, 1694, to Purcell and the Precentor to arrange with Father Smith for an organ to cost 200*l.*, with the request to Wren, 1701, to give an estimate for its case. Smith had built an organ for the Abbey in 1660. According to Grove's "Dictionary of Music," Purcell superintended the erection of a new organ for the coronation of James II. and his Queen. Schneider and Jordan's organ, since greatly enlarged, was reconstructed in 1848, by Hill, and again in 1883, when some additions were made by the gift of Mr. A. D. Clarke. Purcell's grave is adjacent to those of Arnold, Sterndale Bennett, Blow, and Croft, in what has been not inaptly called the "Musicians' Corner" of the Abbey. Its inscription, in brass letters, was restored in 1876 by a public subscription set on foot by the late Dr. Turle. The familiar lines—

Here lyes
Henry Purcell, Esq.,
Who left this life
And is gone to that Blessed Place
Where only his Harmony
can be exceeded,

are cut in the white marble tablet that was set up against the second pier of the nave (counting from the cross), by Lady Elizabeth, *née* Howard, Dryden's wife. The second son of Henry Purcell, gentleman of the Chapel Royal, and master of the choristers, who was buried in the east cloister, 1669, Purcell was born in a house, since destroyed, in Old Pye-street, Westminster. He lived for some while in St. Anne's-lane, a turning out of Old Pye-street, where another musician, Dr. Heather, *obiit* 1627, had also resided. In 1680 he was appointed organist of the Abbey: he died in his official residence, afterwards pulled down for the Precentor's house, on November 21, 1695, in the thirty-seventh year of his age. In Wych-street stood a tavern, the "Purcell's Head," having for sign a half-length figure, remarkable for its green gown and portentously large wig of the kind once known as a "buzz."

THE Town Council of Sheffield had a long discussion or dispute last week, and seem to have been very much divided in opinion, on a point on which there ought to be no two opinions at all. It appears that the Improvement Committee had received tenders for the furnishing of the Town Hall, and had written to certain firms which were lowest informing them that certain of the contracts would be placed in their hands; when fourteen days afterwards they received a communication from the firm which had tendered highest, to the effect that their clerk had made an unfortunate mistake in some calculations, which had caused their tender to be far higher than it should have been, and asking permission to submit an amended tender. Permission was granted, and the amended tender turned out to be slightly below one of those already accepted, and the work was accordingly given to the amending firm. It would probably strike a good many people, on reading the report of the discussion in the local papers, that there was a curious coincidence in the fact of the amended tender being reduced just low enough to have a claim to acceptance. But however that may be, there can be no sort of doubt that the Improvement Committee were wrong in the first instance in allowing an amended tender to be sent in, and that the Council acted very weakly in not quashing the decision of the Committee. In fairness to all who are tendering, especially for large contracts, the date named for opening tenders ought to be absolutely adhered to, and firms which cannot do without making mistakes in their tenders must abide by their mistakes. Any other course is, to say the least, exceedingly unbusiness-like, and is liable to an even worse construction.

DR. FLEMING'S report to the Plymouth Electric Lighting and Traction Committee is well worth reading by all interested in the future of electric lighting. The system he advises—an alternating current with transformer sub-centres like the one at Tunbridge Wells which we recently described—is the one which is becoming most popular with electrical engineers. Dr. Fleming's remarks on the primary importance of good street lighting, which is for the benefit of all ratepayers alike, are much to the point. The most interesting part of his report, however, is that which treats of the employment of refuse-destructors for power purposes. Nothing might seem more obvious than to suggest that one station would be sufficient for the destruction of refuse and the generation of electricity for lighting and traction. Dr. Fleming points out the objection to this arrangement, namely, that the heat obtained from the refuse-destructors would not be nearly sufficient to work the engines at their full load, and hence that some thermal storage system would have to be adopted. Whether the system invented by Mr. Druitt Halpin, and adopted by the Shoreditch Vestry, will work safely and economically in practice has yet to be seen. He, therefore, advises that the refuse-destructor station be entirely independent of the other, but at the same time contiguous to it, so that in the event of Mr. Druitt Halpin's scheme being successful it could be adopted. He rightly thinks that the main question in the construction of a refuse-destructor station is the sanitary one. He also advises that the lighting and traction machinery should be quite distinct, although the engines may be supplied with steam from the same battery of boilers. As for the particular system of electric traction to be adopted, he sums up strongly in favour of the overhead trolley, giving figures to show that this system is a very profitable one.

THE new municipal buildings for Cardiff, as proposed in a rough sketch contributed by Mr. Seward to the *Western Mail* a few days ago, appear to promise at least an important public improvement for Cardiff. The buildings have been planned on three sides of a quadrangle, with a garden in the centre, and a further open space left for extension, and at present also to be laid out as a garden. A new street, raised as a terrace, is shown to flank the building on the side adjoining Cardiff Arms Park, towards which the principal elevation will face. But we may draw attention to one important point before it is too late. What is expected to be the amount of traffic along this new street? If it is likely to be a street through which much traffic will pass, it is certainly a mistake to place the Council Chamber directly on the street. Absence of disturbing noise from without is most essential for Council Chambers or Committee-rooms, and such rooms should always be kept away from public streets where possible.

THE Architectural Society of Vienna has been carrying out a series of tests as to the relative strength of vaults, in regard both

to section and material. These, which were commenced in 1890, are now completed. They were carried out under the management of a committee of twenty-one architects and engineers, and have cost the Society over 2,000*l.*, though many of the contractors employed did their work gratuitously. The results have now been published in the form of a report, which can be had from the secretary of the Vienna Architectural Society at the price of 14 florins (about 1*l.* 3s.).

THE model of the monument to the deceased painter Makart, which is to be erected at Vienna, has now been completed, and is being exhibited at the studio of the sculptor, Herr Tilgners. The site for the monument is on the main boulevard (Ringstrasse), near the City Park. The model shows the deceased painter in a Malay costume, which he wore at the last great artists' *fête* which he attended, and is considered an excellent portrait. Similar monuments will be erected in memory of the deceased artists Schindler, Waldmüller, and Pettenkofen. The Schindler memorial is in the hands of Professor Hellmer, and will also be erected near the City Park. An elaborate tombstone has been lately erected by the municipality in memory of Schindler, and another is to be erected over the grave of the deceased architect, Baron von Hasenauer, the cost of which will be defrayed by his former assistants and the builders who worked under his directions. The design is by Baron Hasenauer's successor, Baurath Hofer, and the sculptor Johannes Benk.

MESSRS. ROUMIEU & AITCHISON, architects, have just sent in a report to the rector and churchwardens of St. Anne's, Soho, at the request of the rector, on the extensive decay of the cement wall-covering of this brick-built church. The report was necessitated by the receipt of a "dangerous structure" notice from the London County Council. The church is credited to Wren, though this attribution seems uncertain. In their report the architects have drawn attention to the need of internal re-decoration. This, however, with the absolute necessity for external repair, is a question of funds, and may have to be abandoned. The clock-tower of the church is said to have been erected by a Dutch architect, and certainly the design of its finial recalls Dutch taste in such matters. There are two designs in existence showing alternative treatments for the tower.

IT is stated that the Governors of Queen Elizabeth's Free Grammar School of St. Saviour, Southwark, intend to remove their school to some convenient spot in the London suburbs. The foundation, whose once small income has increased of late years, was established by William Emerson, *obiit* 1575, Thomas Cure, the Queen's saddler, *obiit* 1588, and some "other discreet and more sad inhabitants of St. Saviour's" for thirty boys of both poor and rich parishioners. In May, 1562, they bought part of the "Green Dragon," formerly Cobham's Inn, a town mansion of Lord Cobham, of Sterborough—*teste* Mrs. E. Boger, in her book, "Bygone Southwark," 1895—which stood on the south side of the churchyard. On June 4 of that year Elizabeth gave the Governors a charter of incorporation. During the fire which consumed much of this quarter of the Borough in May, 1676, the schools buildings were blown up with gunpowder to stay the course of the flames; but they were speedily reconstructed. The later school-house, which, in its turn, was pulled down, in 1839, for an extension of the neighbouring Borough Market is illustrated in the *Mirror* of April 18, 1840, and in Wilkinson's "Londina." Thereupon the existing premises were erected in Sumner-street, near St. Peter's church, on a plot of ground given by Dr. Charles Sumner, Bishop of Winchester, the greater portion of the cost being defrayed by the trustees of Miss Hyndman's bequest, locally known as "Hyndman's Bounty"; the parishioners contributed 1,700*l.* The buildings are of brick with stone dressings, after the domestic Elizabethan style, and were designed, we read,* by Christopher Edmonds. In this school was educated Dr. Heberden, who endowed the master's salary with a donation of 500*l.* About fifty years ago a scheme of the Court of Chancery provided for a revision of the statutes, and the foundation is now open to all. The new buildings are to provide for not fewer than 200 boys.

THE proposal to form a branch Architectural Society at Plymouth, in connexion with the Devon and Exeter Architectural Society is to be discussed at a special meeting at 11.30 to-day (Saturday) at the Plymouth Athenæum. It is to be hoped that the result will be satisfactory. The Hon. Secretary for the Plymouth Local Committee is Mr. S. M. Leest, Laboratory House, Devonport, with whom architects who are practically interested in the movement can communicate.

SANITARY authorities in Cornwall appear to be very hard to move. In his last Report to the Cornwall County Council, Mr. Trevail, the Chairman of the Sanitary Committee, says: "Typhoid fever is on the increase. From 16 cases for August it has risen to 23 for September, with the same number of deaths as last month, viz., 4. The worst places for this month are Helston (Rural), 3 cases and 2 deaths; Helston (Urban), 3 cases; St. Ives, 4 cases; and Truro City, 5 cases and 1 death. At Helston the disease has evidently been caused by polluted pump-water, whilst at Truro, the fact of the outbreak synchronising with the bad smells referred to in last month's report points to its source. Notwithstanding the repeated advice of the Medical Officer of Health, and the pungent words contained in his last report to the City Council on the condition of the city's drainage, the majority of the Council seemed determined to continue the policy of polluting the river with sewage until a superior authority insists upon the execution of an efficient drainage scheme."

THE small Birmingham art-paper, entitled *The Quest*, is to begin a new series in November, in the hands of new publishers.† The paper is hand-printed at the press of the Birmingham Guild of Handicraft, and the style of printing and of decorative letters and headings is very good, but this has hitherto been accompanied by bad figure-drawing, and representations of architecture which can only be called puerile in style; and we are not promised any improvement in this respect. The figure on the front page of the publishers' announcement sent to us, and which we presume is intended as a specimen of the style of illustration to appear in the magazine, is ridiculous as a specimen of figure-drawing, being entirely out of proportion, as the reader may see from the reduced copy of it here given. The pretence at a superior style in decorative design, coupled with the neglect of figure-drawing and the distortion of the true proportions of the figure—the grandest element in decorative art—can be the result of nothing but a foolish affectation which is entirely at variance with what is sound and healthy in art.

* Mr. Walford's "Old and New London."
† Messrs. Napier & Co., Birmingham.

AS there is likely to be a great run on "Trilby," the dramatised version of Mr. Du Maurier's novel, it will probably be matter of general interest to the public that all Mr. Du Maurier's illustrations to the story (which to our thinking constitute its principal claim to attention) have been purchased by the Society of Fine Arts, and will be exhibited in their rooms about the same time that the play is produced, the private view being fixed for November 1.

AFTER one has got a little used to them, one may find a good deal to admire among the modern Dutch water-colour drawings at the Goupil Gallery. It is at first rather depressing to see so many things that look (to the prejudiced eye) rather like smears than pictures, and to come across landscapes apparently painted in various shades of ink, and destitute of either sunlight or colour. But by degrees we discover that Offerman's "Marchand d'Antiquités" is a really fine painting of bric-à-brac disposed around a figure, and is rich in colour in a restrained and sombre way; that Van Mastenbroek's "Rotterdam" is a very fine composition with a grand style about the sky; that Du Chattel's "The Lake Farm," however grey, is also a thought in landscape, with the white houses just in the right place; that Mdlle. Valkenberg's "The Eident Hand" is a very good "interior with figure"; that every muddle of sheep by Mauve, however grimy in colour, has artistic purpose in it; and that Vrolyk's "Milking Time" shows an admirably-painted cow combining most artistically with the landscape. And so on the whole we go out happier than we came in, only wondering why it has pleased Providence to deprive so many able men, whose artistic instincts are undeniable, of the ordinary perceptions of daylight and colour vouchsafed to otherwise inferior members of the species.

AMERICAN OPINION ON ARCHITECTURAL EDUCATION.

THE printed record of the twenty-eighth annual Convention of the American Institute of Architects, held last year at New York, has just been issued as a handsomely-printed volume of about 200 pages. There is a great deal of interesting discussion in this volume upon many topics connected with architecture, to some of which we may return. At the present moment, when we are all a good deal occupied about architectural education, it may be of interest to reprint here the report on the subject of education, drawn up by Mr. Van Brunt, as Chairman of the Education committee. The education problem may in some questions of detail differ from that which is presented to us in England, but in the main the position is much the same on both sides of the Atlantic. The report in question is interesting not only from its intrinsic merit and from the broad and ambitious views expressed in it, but also because it rather reminds us in some passages of the view taken by the late M. César Daly in regard to the necessity for a philosophic study of the past of architecture, in order to understand properly the needs of the present and future, and to make a choice of style and treatment on intellectual grounds, and not merely at the haphazard of taste and predilection of the moment. After some preliminary remarks, the Report proceeds:—

"We consider that the present condition of architecture in this country as a fine art, though there are clear indications of a late advance in academic scholarship, and in *technique* generally, is unsatisfactory, because in this advance there cannot be detected any healthy progressive principle. In fact, it is rather a progress of personal enterprise and skill than of principles, and does not seem to promise any large or characteristically national fulfilment. It is made on irregular skirmishing lines, not without evidence of individual gallantry here and there, but with none of that effective unity of effort, which is the only means of achieving results adequate and proper to our especial civilisation.

As architecture is now for the first time in the hands of men of education, it becomes very important indeed for us to consider whether this education cannot be such as to inculcate convictions, to make our young architects the

a

agents of a far more definite and orderly progress, and to inspire them with a certain definite consciousness of duty in respect to the development of a system of architectural forms, less conventional in character, and more accurately adjusted to the expression of our new life.

But it may be said, 'Let us be content to do our duty to our art and to our clients, each one to the best of his ability and according to his best lights, and let the style of our time take care of itself, as the styles of former ages and peoples have been created. For these historical styles have developed *themselves* out of political, religious, commercial, ethnological, and social conditions, and *technique* has varied with variations in materials and methods. Why should we attempt to interfere with this natural automatic process of evolution!'

In the answer to this question is involved a statement of the difference in the conditions in practice in ancient and modern times. But it seems hardly necessary to repeat this statement before such an audience as this, and to say again that our past is a far larger region, a far greater inheritance, than belonged to any of our predecessors, and that our minds are preoccupied and our ideas complicated by an infinite variety of architectural monuments.

The progress of investigation in archæology has made us familiar with the buildings and arts of every age and race; we have classified and defined the styles; we have theorised infinitely and created a science of æsthetics. We can therefore no longer be like our predecessors—unconscious ministers in the development of style. As our resources have been infinitely expanded, our personal responsibilities to our art have become far greater and our task far more difficult. Architecture has thus necessarily become a learned profession, and we cannot do our duty without academies, libraries, and museums, and a large equipment of photographs and prints. The architects of the great historical eras, dealing with comparatively simple problems, and with only one set of forms at a time, were enabled to concentrate their forces, to develop style without affectations, and with infinitely less consciousness of effort than ourselves, who are distracted by our knowledge and perplexed by our exacting reminiscences. These conditions have introduced a new element into the practice of architecture, an element of self-consciousness, of dilettantism and imitation, which have sophisticated modern architectural manifestations and deprived them of that sincerity, power and simplicity, which can result only from concentration of intelligent effort and from strong convictions, based, not upon the traditions of the studios, but upon a philosophical analysis of our vast resources of design.

Without presuming to criticise the methods of instruction in our schools of architecture as at present conducted, and certainly with a grateful appreciation of what their professors and teachers have already accomplished in the service of a purer and nobler art, we would ask them to systematise and co-ordinate the study of all the historic styles, as they were successfully developed in their progress from picturesque barbarism to the elegance and refinement of the higher civilisations; to make this study an essential part of the curriculum of the schools; to teach the outlines of history by the architecture which was a part of it; not to select certain of the styles for exclusive study, leaving what seems the less interesting and beautiful, the less highly-organised or less applicable to our use to be picked up by chance, if at all. Our project would be to pursue this study of history through its manifestations in architecture from archaic to modern times, or at least to the nineteenth century, not with the minute, patient scrutiny of the archæologist, but with the spirit of the artist, seeking to learn how forms and ornament were developed out of the genius of civilisations and peoples, and how, as they were significant of the progress of human culture in the past, they should be used in the service of modern art.

We recognise that the best discipline of the faculties of design can be obtained only by especial and continued practice with the most highly-organised of all these styles, and that classic art must continue to be the *means*, but not the *end*, of this discipline.

We believe that this organised study of the historical styles would prevent the graduates of our schools from becoming mere spendthrifts with their inheritance, and that with this new knowledge, apparently never heretofore taught, they would learn to be tolerant. 'Savoir c'est pardonner.' They would practise, not with unreasoning prejudice in favour of this, that, or the other forms of art, nor with the indifference of electicism, but with a sense of the deep significance of these forms, to whatever era they belonged, as expressions of the history of our race, and with a conviction that decorative forms in historical architecture are not mere fashions or accidents of the times, not mere independent, isolated phenomena, but symbols, slowly evolved by processes of art from certain definite conditions of human life, as links in a continuous chain of evolution, as genuine and serious manifestations of art, however rude.

Would not this larger comprehension, thus obtained, of the significance of ancient decorative forms, and this increased respect for them as means of expression, have an immediate effect upon their adjustment to modern uses, and ultimately upon the development of contemporary style? Would they not be used with more intelligence and feeling? Would not our young architects be less subject to undisciplined caprice on the one hand, or to academical prejudice on the other? Would they not become in the best sense catholic and more worthy to inherit the inexhaustible wealth of the past? Would they not, above all perhaps, be freed from the mean virtue of conformity, or archæological accuracy, which has done more to retard the progress of architecture as a fine art than any other influence except ignorance and pretence?

There can be no doubt that, as the true basis of architectural composition of the highest sort is to proportion and to decorate structure, and that as structure is constantly developing with new methods, new devices of engineering, and new materials, the architecture of the immediate future must necessarily assume new character, at least in its outlines, supplanting to a great extent those Classic or romantic ideals or standards which custom has arbitrarily imposed upon modern practice. Are our present methods of education preparing our young men to accept these inevitable changes without a wasteful and futile effort to effect a reconciliation between ancient academic prejudices and these new things? Will the architecture of our country in the next decade express in no doubtful terms the civilisation of America in its best estate? For this difficult task do we not need a much more scientific co-ordination of precedent, a much more philosophic analysis of the architecture of the past than is secured by our present methods of education? The question evidently is, not how are we to effect a compromise between engineering and architecture, but how are we to convert engineering into architecture; how are we to use the immense resources of beautiful precedent at our command in order to translate this prose into the poetry of a high art? The language of form, made accessible to us by a system of study, such as we propose, would be as copious as the language of words at the command of Tennyson and Browning, of Longfellow and Lowell. The vast vocabulary of these great masters, these 'builders of the lofty rhyme,' is made up of words and phrases, derived from the entire experience of mankind, not from any especial era, or from any selection approved by any school or academy of learning. They could not have expressed their inspirations with any such arbitrary or scholastic limitations of terms. The duties and the privileges of the modern architect in respect to this art are the same as those of the modern poet in respect to literature, but the prejudices of the architect's education have, by exclusions of language, apparently entirely artificial and unnecessary, embarrassed his efforts to express in terms of art, the exigencies of modern structure, material, and use. He is still trying to write new songs and sonnets and epics in classic Latin or Mediæval French, and is still wondering that no one but himself comprehends or enjoys them. We are conscious that this analogy between literature and architecture must not be pushed too far, for the two arts have very different messages to deliver to the intelligence of mankind. Architecture, of course, can express conditions and thought only indirectly by symbols. But the analogy is close enough to support and illustrate our argument.

If the American Institute of Architects should succeed in persuading the schools of architecture throughout the country to teach the whole course of history by architecture, and should open to them the whole series of historic forms in the order of their evolution without prejudice, the genius of the more spacious times in which we live, which are the culmination and the result of all that has gone before, would stand a much better chance for adequate expression. Let the schools teach our young men not to conceal or disguise or condone in a mask of cold convention, the inevitable changes of form which must come in process of time with the changes in our social and economic conditions, but to welcome them frankly and express them, not with quotations from other tongues, not with the affectations and pedantries of academical learning, but with the large freedom derived from a comprehensive knowledge of all that has been done or said in forms of art by all people.

It seems to us that it is only by some such process as this, that architecture as a fine art can keep pace with science. We are not proposing any such folly as the deliberate invention of a new style, or any possible amalgam of old styles, but we are inquiring whether it is not practicable, by an analytic study of precedent, without arbitrary preferences, to apply to the art of our times a synthetic method of evolution. Our art should be an art of scholars and artists, not of antiquarians, nor of amateurs, nor of pretenders. They should be instructed and inspired by the past, not controlled by it. As viewed from a philosophical standpoint, do not our present methods, without such a comparative study of form as this, open us fairly to the charge of empiricism?

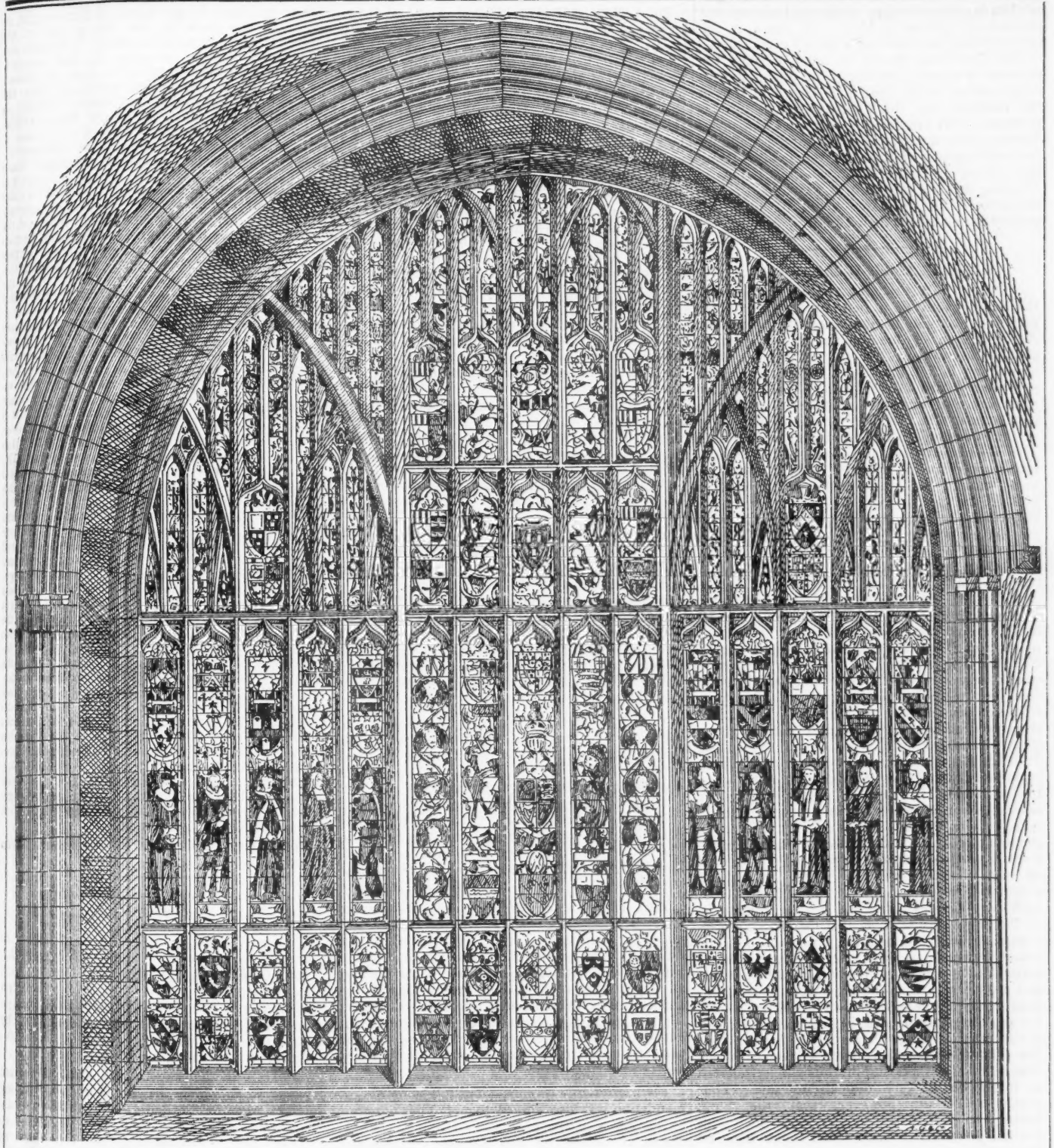
If we may not in this way accomplish a revolution in the architecture of our time (we do not desire a revolution, but a reform) we may at least give to the architects of the next decade a far wider point of view and a far deeper understanding of their functions and responsibilities in an evolution of style, which, if it is not directed, will continue to be lost in fruitless and disorderly experiments.

When we see members of the Institute, men of the highest available professional training, repeating at the same times and in the same places châteaux of Francis I., town halls of Henry IV., Italian villas of the cinque cento, palaces of Palladio, decorating casinos and theatres with every form of Arabian or Saracenic art, with building libraries in southern Romanesque, country houses like the farms of Normandy, churches like those of Edward IV., or St. Louis, dwellings after those of every era of English history, public structures in every form of the Renaissance,—when we see them dissipating their forces in these barren revivals, each one according to his fancy, we may well doubt if this is the best possible use of our knowledge of precedent. Can the discipline of our schools produce no better result than this confusion of tongues? Is it not time for us to consider how we can work together with profitable unity of effort, each aiding the other? Does not the inevitable modern accent which may be detected in all these attempts to speak ancient languages, prove that characteristic modern style is possible, and is only restrained from its full and natural development by the prejudice of our education? If the secret of rational progress does not lie in a more scientific and thorough method of studying the succession of the styles and the historical conditions from which they grew, to the end that we may use them, not as mere imitators and revivalists, but as artists and creators, where else shall we seek for a remedy?

The new type born of such a study must necessarily be infinitely richer, more elastic, more various than any of those which lie behind it; it must include all their virtues and none of their vices. It would substitue a true vernacular for one which is spurious and vulgar. Architectural effort, united upon such a type as this, would not imply a uniformity, which would soon become wearisome and monotonous. It would rather imply variety in unity, effective concentration of power, and such a concentration means logical and consistent progress. Such a progress with our present methods surely we are not achieving.

Hitherto, it must be sadly confessed, we have treated our great resources, if not like undisciplined barbarians with the spoils of war, certainly more like the arbiters of Parisian fashions, than like artists and scholars. The new education, far less pedantic, and far more cosmopolitan and generous than the old, and also far more discriminating, must teach us the real value and meaning of our inheritance, and how to use it with a full appreciation of our responsibility to art and to the civilisation of our time."

The view embodied here, as to what is possible and what should be aimed at in education in the history of architecture, is certainly a very broad one; and perhaps it is not surprising to find that, in the discussion which followed it, some members regarded the tone of the Report as Utopian. Mr. G. B. Post thought that Mr. Van Brunt's proposal would do very well in a postgraduate course which could last two or three hundred years, but that to attempt to guide young men of



Heraldic Window in the new Mitchell Hall, Marischal College, Aberdeen.

sixteen or seventeen into a study of architectural history on this scale was an impossibility. One or two other speakers, however, supported the spirit of the Report, urging that learners were at present taught certain styles instead of being taught the whole of architecture; and Mr. Van Brunt summed up his position briefly in the remark that "in the schools of architecture the history of architecture is taught now in some form or other. I propose simply to have the history of architecture *properly* taught." In the end it was resolved that the Report should be forwarded to the heads of the educational institutions, for the purpose of obtaining their views on the subject.

It is worth remark, in connexion with the subject, that, while some leading English architects have recently been deprecating the study of the history of architecture altogether, as an employment of no value towards the making of a modern architect, our American friends seem to be of opinion that it is a study which ought to be carried out much more thoroughly than it has hitherto been.

HERALDIC WINDOW AT THE MITCHELL HALL, ABERDEEN.

The illustration gives a sketch of the window in the east-end of the new Mitchell Hall, Marischal College, Aberdeen. The window is a distinctly historical and heraldic one, embodying the arms of a number of personages connected with the history of the college, together with portraits of certain of them. The portraits are those of the fifth Earl of Marischal, Thomas Reid, Gilbert Burnet, James Gregory, and Dr. Arbuthnot, on the left; and on the right, Marshal Keith, Thomas Reid, James Beattie, Principal George Campbell, and Lord Monboddo. The window was designed and executed by Mr. T. Spence, of London.

THE TURNERS' COMPANY EXHIBITION.

The twenty-sixth annual Exhibition of specimens of hand-turning in wood, instituted by the Company of Turners, is being held during the week at the Mansion House. The exhibits, on the whole, are quite equal to those of previous years; but, although the technical quality is in many cases excellent, several are examples of the application of the art to purposes to which it is manifestly unsuitable. It seems, moreover, to be accepted as an almost invariable rule that every object must be polished on completion, but many of the exhibits would look quieter and better suited to their purpose if untouched after leaving the tool, a method which also gives more individuality and character to the work.

A ladies' work-basket in the form of a tripod, in polished wood, obtains the first prize, which goes to Mr. G. H. Alderton. The prize consists of a silver medal, the freedom of the Company and of the City of London, and five guineas. The design is pretentious and crowded with ornamentation, but well executed, a point which probably influenced the judges. The bronze medal is given to Mr. R. H. Isaacs, for a collection of square turned balusters, which are excellent in workmanship and design, and which might well have had the first prize. A "pillar-lampstand," which is awarded the third prize, seems a design quite unsuited to wood, and which, being polished, presents on that account all the more of the appearance of a design for ironwork. The spiral balusters by Mr. Alfred Miller are ingenious in their construction of different woods overlaying one another, which, however, does not strictly come within the sphere of turning. The mahogany brackets by Mr. Watson are a good example of work left unpolished from the tool.

In the class of amateurs, the Rev. C. C. Ellison obtains a first certificate of merit for a collection of small objects in ivory, beautifully executed, but much resembling the ordinary trade

exhibits in point of design. Some napkin-rings and pin-cushion holders by Mr. C. N. Pearn, in the same division, are awarded a second certificate.

The Exhibition should do much to raise the standard of mere workmanship, but the question of design seems as far behind as ever, and it is in this direction that the Company should turn its influence. We are unaware that the Company of Turners have done any service to the trade by the establishment of classes at the Trades' Training School at Great Titchfield-street; but in adopting such a course and in providing the best instructors, the Company would be furthering greatly the objects of their Guild.

A NEW ARTIFICIAL STONE.

"Owen's Patent Artificial Stone" is the name given to a new variety of building material shortly to be introduced to the market. An inspection of the process of manufacture enables us to give the following information concerning it. A mixture of 9 parts sand with 1 of lime is first of all thoroughly incorporated in the dry state in an iron cylinder, after which it is taken out and placed in moulds of the shape of the moulding, panel, or block to be made. The moulds are then transferred to another and specially-constructed cylinder, and, on the latter being closed, hot water is forced in under a pressure of 50 lbs. to 60 lbs. per square inch; but, before being injected, the air is, as far as possible, abstracted. This pressure is applied for seventy hours, the temperature of the water circulating in the cylinder being kept up to near the boiling point the whole time. The box-moulds are afterwards withdrawn, and the contents allowed to dry in the air. Several kinds of sand have been adopted in the experiments carried out, and a brown, quartzose variety from the neighbourhood of Leighton Buzzard is said to answer very well. The lime employed is from Barrow-on-Soar, in Leicestershire. Judging from samples shown us at the works the artificial stone produced is of a compact nature, somewhat resembling certain calcareous sandstones. It is rather premature to speculate on the comparative durability of the material; no stone in the market is made in precisely the same manner, but a material very much like it comes here from Germany. On general grounds we should not select a natural sandstone having a calcareous matrix, on account of the liability of the latter to rapidly succumb to atmospheric influences. But with Mr. Owen's stone the matrix cannot be of the same character as that of any naturally-formed building stone, for this reason: The cementing material of a calcareous sandstone is carbonate of lime, or a double carbonate of lime and magnesia. But the lime from Barrow-on-Soar, used in the artificial stone, is not a carbonate, the carbonic acid having been driven off in the process of manufacturing the lime. What the precise effects after being subjected to the temperature and pressure in the cylinder referred to might be is very difficult to say. Thus much is certain, however, that the lime, having to be slaked under the conditions named, is rendered harder and more compact than when the slaking is carried out in the open air, and it is reasonable to suppose, therefore, that the material would be more durable than an ordinary cement or mortar block. Samples of the stone, six or seven weeks old, have been tested in Paris, and resisted a crushing strain of 3,383 lbs. per square inch, which is satisfactory. We imagine that still better results could be obtained and an improvement effected all round if a sharper and purer quartzose sand were employed. This patent stone will, no doubt, be as good as any other in the market, and the fact that it can be readily turned and has a fine surface is distinctly in its favour.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday, at the County Hall, Spring Gardens, Sir Arthur Arnold, Chairman, presiding.

The Water Question.—The debate on this question was resumed on the following recommendation of the Parliamentary Committee:—

"That, desiring that the supply of water in the Metropolis and the surrounding districts should be in the hands of a public authority, and with a view to a complete agreement with all parties concerned over the entire area supplied, the Council do invite Her Majesty's Government either to deal with the question themselves or to appoint a Royal Commission to do so."

Dr. Collins said that, in view of the decision arrived at last week, when the Moderate party succeeded in wrecking the Council's Water Bills, the Council had now to consider the recommendation of the Committee, which seemed to embody the view that the Council should not be the water-authority. He could not believe that the Moderate party desired to belittle the Council by proposing to set aside what might be regarded as the inalienable right of municipalities to deal with such matters. He, therefore, desired to move the following amendment:—

"That the Council having decided not to proceed with the suspended Water Bills, and desiring that the Council should be the Water Authority for London, it be referred to the Parliamentary Committee to report to the Council without delay the lines on which they suggest that the Government should be asked to legislate."

Mr. M'Kinnan Wood seconded the amendment, which, after a long debate was, on a show of hands, declared carried by a majority of 1. On a division there voted for the amendment, 65; against, 56.

Sir John Lubbock then moved that there be added:—

"That the Parliamentary Committee be instructed to print and lay before the Council the memorandum by the Deputy Chairman on the water question, with the exception of such parts, if any, as would in their opinion be prejudicial to the interests of the ratepayers."

Mr. Westacott seconded the amendment, which was agreed to without discussion. The Report of the Parliamentary Committee as amended was then agreed to.

Mr. Idris moved the reception of the Report of the Water Committee on the Welsh water areas.

Mr. Beresford Hope moved that the debate on this Report should be adjourned till the Parliamentary Committee had reported on the water policy of the Council. This was carried on a show of hands.

Charing Cross-road Subway.—On the recommendation of the Highways Committee, it was agreed that the consent of the Council be given to the removal by the Vestry of St. Martin-in-the-Fields of the subway-entrance at the St. Martin's-place end of the Charing Cross-road subway, and the formation of a new entrance; but that such consent be subject to the condition that proper communication be formed, of the full length of the grating, from the new entrance into the subway.

New Weights and Measures Office.—On the recommendation of the Public Control Committee, it was agreed:—"That, subject to an estimate being submitted to the Council by the Finance Committee, as required by the statute, an expenditure of 6,770*l.* be sanctioned for the erection of a Weights and Measures Office in Harrow-road; that the work be carried out without the intervention of a contractor; and that the plan and estimate be referred to the Works Committee for that purpose."

Constant Water Supply.—The following recommendation was also agreed to:—"That pursuant to Section 8 of the Metropolis Water Act, 1871, notice be served on the Chelsea Waterworks Company to give a constant supply of water on and after March 1, 1896, to a district bounded by a line starting in Victoria-street at its junction with Strutton-ground, thence along the north side of Victoria-street, The Sanctuary, and Bridge-street, to the bank of the Thames, thence along the bank of the Thames to Page-street, along Page-street, Vincent-square, Rochester-row, and Strutton-ground, to the point in Victoria-street aforesaid.

Boundary-street Improvement Scheme: Central Laundry.—The Public Health and Housing Committee recommended:—

"That, subject to an additional estimate being submitted to the Council by the Finance Committee as required by the statute, the work of erecting the central laundry in connexion with the Boundary-street improvement scheme be executed by the Council without the intervention of a contractor, and that the plans, specification, and estimate be referred to the Work Committee for that purpose; but that, in the event of that Committee not being satisfied of the sufficiency of the estimate, the Public Health and Housing Committee be authorised to invite tenders for the work."

The recommendation was ultimately agreed to.

Sanitary Staff of Rotherhithe.—The report of the same Committee contained the following paragraph:—

"Complaint having been made to the Council by the Mansion House Council on the Dwellings of the Poor as to a large number of sanitary defects in houses in the parish of Rotherhithe, an inspection was made by Dr. Young, one of the Council's Assistant Medical Officers of Health, and he reported that the complaint was well founded, defects being discovered at no less than 502 houses. The Council arrived at the conclusion that the Vestry of Rotherhithe had made default in carrying out the provisions of the Public Health (London) Act, 1891, in their district, and a representation to that effect was, on February 23, 1893, made to the Local Government Board under Section 101 of the Act. A representation was also made under Section 107 that the Vestry had failed to appoint a sufficient number of sanitary inspectors. The Council subsequently informed the Board that if an inquiry were made under Section 107, it might not be necessary to proceed further in respect of the representation under Section 101. The Board, on June 6, 1893, forwarded to the Council a copy of a letter from the Vestry stating that they had appointed two temporary assistant sanitary inspectors at a salary of 3*l.* a week each, and intimated that before directing an inquiry with reference to the Council's representation under Section 107 of the Act, the Board would be glad to receive any observations which the Council might desire to make on the Vestry's letter. The Council replied that it would prefer to reserve any further expression of opinion as to the sufficiency of the sanitary staff until the inquiry asked for had taken place. The Board thereupon in July, 1893, instructed their medical inspector, Dr. Theodore Thomson, to make this inquiry, and in a letter, dated June 7, 1895, nearly two years later, the Board, give particulars of the sanitary staff now employed by the Vestry, and state that the Vestry's Medical Officer considers the staff now sufficient, and that under all the circumstances the Board think it desirable that the new arrangement should have a trial for twelve months. In view of the protracted delay in providing an efficient administration for the Parish we regret that the matter should have to remain in abeyance for twelve months. We may remind the Council that the insufficiency of the Vestry's sanitary staff was the subject of an inquiry by the Home Secretary as long ago as 1889, when definite recommendations were made. No effect was given to these recommendations, and in 1893 the inquiry by the Council's Assistant Medical Officer, Dr. Young, showed that the Vestry were still neglecting to enforce the provisions of the Public Health (London) Act, 1891. As, however, the Local Government Board think that a trial should be given to the existing arrangements, we have adjourned the further consideration of the question for twelve months."

The Council adjourned a little before seven o'clock.

Books.

The Law Regulating Streets and Buildings in the Metropolis under the London Building Act, 1894; and other Metropolitan Statutes, &c. By R. Cunningham Glen, M.A., Barrister-at-Law, and Arthur A. Bethune, Barrister-at-Law. With Explanatory Diagrams by Alfred Conder, F.R.I.B.A. London: Knight & Co. 1895.

THIS is the largest and most important work which the new London Building Act has called forth, and appears to contain everything that can be necessary to the full understanding of the law as at present controlling building in the Metropolitan area. The text of the Building Act is accompanied by long explanatory comments, making clear the true force of each section where it appears to need elucidation, with references to other portions of the Act which bear upon the points mentioned in the section under notice. All the other Acts, or parts of them, still in force and which bear on building operations, are given, and all the Standing Orders and By-laws of the London County Council. Mr. Conder's diagrams are full and intelligible, and the book is very thoroughly indexed. Wherever in any section a definition of the meaning of any term in it would be necessary in order to understand the legal conditions of the section, or the process of acting upon its provisions, cross-references are given to the sections in which the required definition may be found. In the case of expressions of which the legal meaning may be doubtful, such as "pier," definitions are given from Gwilt and other standard works on building. The authors have not attempted to elucidate the curious contradictions in terms which occur in one or two clauses of the Act, from negligent wording, probably considering that their business was to deal with the legal provisions as they found them, and not to enter into criticisms. But, in general, it may be said that they have done all that seems possible to enable every man to be his own lawyer in the interpretation of the London Building Act.

Contractors' Price-Book for 1895. By Edward de Vere Buckingham. London: Biggs & Co., Salisbury-court, Fleet-street.

The first thought suggested on taking up this portentous volume is, Why another price-book? Have we not already Laxton, Lockwood, and Spon? On inspection, however, we admit that the book before us sufficiently differs from others to justify its existence. Speaking generally, it may be said to deal rather with engineering than with building work. Thus, some 250 pages are occupied with excavation, pile-driving, concreting, road-making, and the drainage of towns as well as houses, before we come to bricklaying—a point reached in most price-books in twenty pages. Later on, we find coal-shafts, pontoon ferry bridges, dock gates and cranes, chain-cables, waterworks, and about forty pages concerned with the construction and the rolling-stock of railways and tramways. To be noted also is the unusual amount of attention paid to the important matter of contractors' plant. The novel plan adopted of numbering consecutively the items of price and lettering the notes is convenient for reference. The author has also done wisely in making his prices represent prime cost based on the London rates of wages. Some of the notes are excellent. To give a rule for finding the value per foot of brick facing is a good idea. The same cannot, however, be said of the following: "All glazed work (*i.e.*, glazed brick facings) should be measured net, and an allowance made to such measurements for waste in cutting, according to circumstances, from 5 to 15 per cent." (p. 260). There is here a sad want of precision. The proper allowance for waste can be calculated with little difficulty in measuring this kind of work.

As in most price-books, a great deal of space is taken up with unsuitable matter. Why insert in a price-book extracts from specifications?—*e.g.*, "Brickwork should be well flushed up every course with the trowel, and grouted every four courses to ensure stability in the work." Also, far too many formulæ are given; those, for example, for the rise of water caused by obstruction in rivers, and for the discharge of water in canals and channels, are only in place in manuals of engineering or treatises on hydrodynamics. The book already numbers 800 pages, and we are told in the preface that the schedules for carpenters' and joiners', plasterers', smiths' and founders', and painters' work "are only in their infancy." In face of this, any suggestion for saving space should be well received.

As we have pointed out on previous occasions, no set of prices can be considered satisfactory in which the value of the labour and that of the material involved in any given piece of work are not separately shown. The author here crudely attempts to deal with a trade as a whole—as thus: "The proportion which labour bears to material in this schedule [masonry] may be taken as equal to 66 per cent." The only value of this is in the evidence it affords that the author is alive to the consideration above mentioned. If he will lay it to heart he will double the value of his book.

A Digest of the Law of Light; with an Appendix of Statutes, Forms, and Plans. By Edward Stanley Roscoe, Barrister-at-Law. Third Edition. London: Reeves & Turner. 1895.

That this clear and useful little book has supplied a want is shown by the fact of its having reached its third edition. The author states the heads of the existing rights and liabilities in regard to light under the head of a number of short statements, or "articles," in non-legal language, with references to legal authorities and precedents, and notes and explanations as to exceptions, or as to points requiring special elucidation. In the present edition the new decisions which have been given since the last edition have been incorporated. Those who wish to know how they stand in regard to their own or their neighbour's right of light will find the book a useful guide.

Rural Water Supply: A Practical Handbook on the Supply of Water and Construction of Waterworks for Small Country Districts. By Allan Greenwell, A.M.I.C.E., and W. T. Curry, A.M.I.C.E., F.G.S. London: Crosby Lockwood & Son. 1896.

This book is based on a series of articles written by one of the authors, Mr. Greenwell, for the "Student's Column" of the *Builder*, from July to December, 1894, so that we can hardly review it from a separate stand-point. It has been apparently re-written and added to, to some extent, and we believe we may conscientiously recommend it as a very useful book for those concerned in obtaining water for small districts, giving a great deal of practical information in a small compass. As the authors mention in their preface, the existing treatises on the subject are mostly of an elaborate character; and they have endeavoured to supply an elementary work such as would enable the student to acquire a knowledge of the principles and construction of waterworks, and qualify him to arrange and complete a system of waterworks, on a moderate scale, in an efficient manner, and thus lay the foundation for the experience which would qualify him to carry out larger works on the same scale.

Popular County Histories: Lancashire. By Lieut.-Colonel Henry Fishwick, F.S.A. London: Elliot Stock. 1894.

It must indeed be, as the author remarks in his preface, a very difficult task to condense into a moderate-sized volume for popular reading a history for which there is such a mass of information available as that of Lancashire. The result is, however, a small book with a great deal of information compressed into it, and put in a well-ordered and readable manner; and those who have an interest in Lancashire, and have not time or inclination to study county history in detail, may be recommended to avail themselves of the general sketch of the subject which Colonel Fishwick's book supplies.

The author groups his subject according to the races either of people or sovereigns who were from time to time dominant in the county; commencing with "pre-Roman Lancashire," and taking the further divisions of its history under Romans, Saxon and Dane, Normans and Plantagenets, Tudors, and "Seventeenth Century," the latter being regarded as the commencement of the modern epoch. Separate chapters are devoted to "Roman Remains," "Progress in the Eighteenth Century," and "The Dawn of the Nineteenth Century," and a miscellaneous chapter goes into a good many county traditions and legends.

The history and progress of the principal towns is specially noted from time to time, and details of cost of labour, and of the objects on which labour was employed at different periods, assist the reader to fill up in his imagination a picture of the state of the county life and civilisation at different periods. The author states that while not thinking it desirable to encumber a popular work of this kind with references to authorities, he has rejected everything which in his opinion was not capable of being well authenticated. His book gives the impression of having been written in this spirit, and besides being thus probably trustworthy as far as it goes, it is a well-written and interesting book of its kind.

The Evil Eye: An Account of an Ancient and Widespread Superstition. By Frederick Thomas Elworthy. London: John Murray. 1895.

This book is a collection of very curious lore, the result evidently of a good deal of study in regard to the manifold forms of the superstition which regards some persons, actions, or substances, as of evil omen and mischievous to those subjected to them. There is a good deal of interest in it, but the only way in which it bears on our province of investigation is in so far as it furnishes the real meaning of some forms and details in archaic art, especially in the emblems and attributes assigned to some figures of deities The author has traced out some connexions between things not generally supposed to be connected; and it may surprise the reader to be told, and to find it argued with great probability, that the horns or antlers of an animal, which form a fashionable ornament in the hall of a country house, were originally placed there to avert malevolent influences; that they are connected with the cult of the horned Isis and Diana; that among the less educated Italians at the present day a horn is one of the most sovereign specifics against the evil-eye, and the mere uttering of the word *corno* or *corna* is a protection; that the horse-shoe nailed on the cottage-door is another form of the same emblem, with the additional power in it arising from the fact that witches and evil spirits of all kinds have an unconquerable aversion to iron. Possibly this latter superstition is a remnant from the far-off days of pre-historic man, to whom iron was a new wonder discovered in his universe, and one of great and mystical signification. Oddly enough, some peoples and tribes have, on the other hand, an aversion to, or some kind of superstitious fear of, iron; the negroes of the Gold Coast remove all metal from their persons when they consult their fetish; and the author connects with this superstition the fact that the wooden bishop's throne at Exeter Cathedral is "constructed entirely without nails or iron of any kind;" but here we think his fancy has run away with him, and that the avoidance of iron in this case was dictated by much more practical considerations. We cannot go further into the subject here, but may recommend the book as an interesting account of a very curious phase in human superstition, and which has not been without its influence on ancient art.

Three Months in the Forests of France; a Pilgrimage in Search of Vestiges of the Irish Saints in France. By Margaret Stokes. London: Geo. Bell & Sons. 1895.

We have mentioned a previous work by Miss Stokes, the main object of which was the same as the present one, viz., to find out traces on the Continent of Irish saints and their apostolic work, but at the same time to notice some of the bearings of the inquiry on Irish architecture and art and their connexion with foreign countries. Miss Stokes's former volume was concerned with traces of Irish saints in Italy; the present one is concerned with traces of Irish saints, especially St. Fursa, in France.

It is mainly a book for those interested in ecclesiastical history and legend; but Miss Stokes's inquiries have brought her into contact with some interesting architectural monuments in out-of-the-way parts of France, and as the book is well illustrated, it may suggest for the architectural reader some new points of interest.

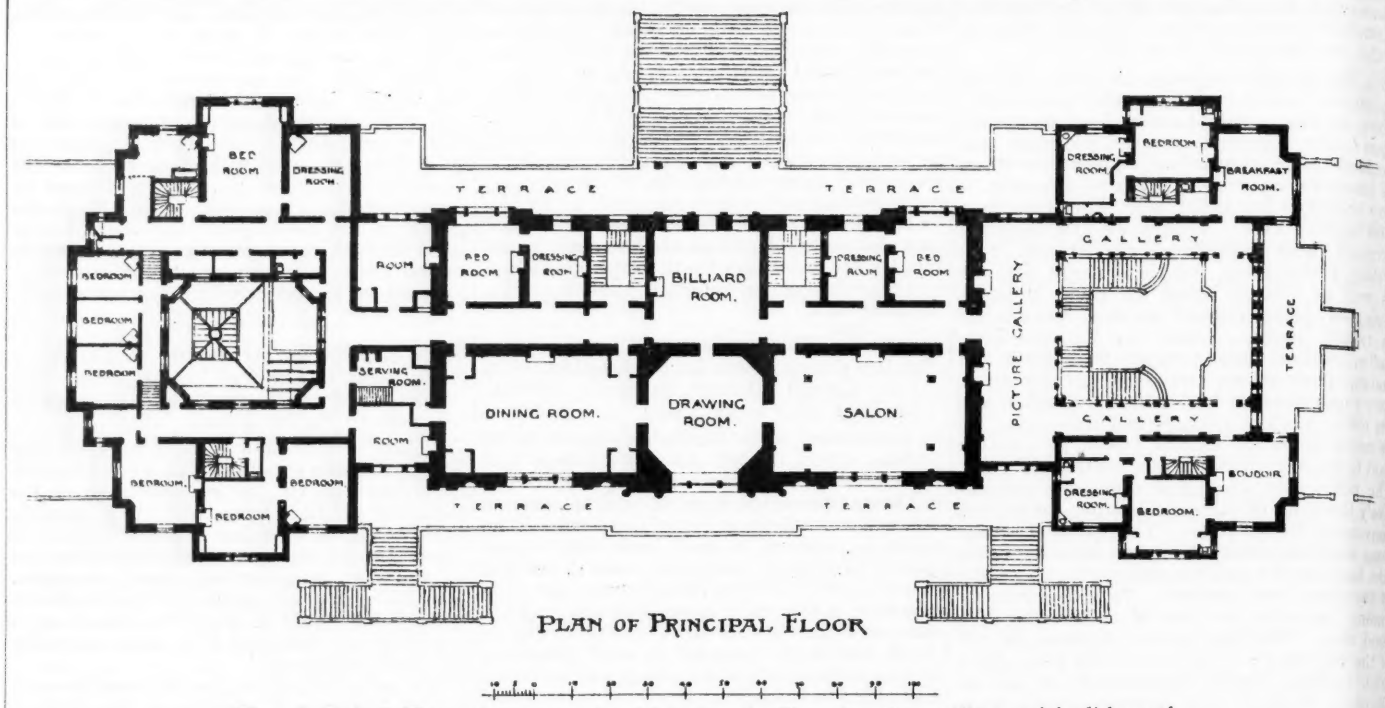
St. Fursa became the patron saint of Pérowne, and there is a chapel to him in the church of St. Jean in that town, of which some illustrations are given. The author also looked for traces of St. Fursa in Suffolk, and in regard to this part of the subject there is, perhaps, some ground for her remark that the English antiquaries of the day, with some exceptions, "devote their energies too exclusively to the Roman remains found in England, ignoring the far deeper interest of their own native traces of early history."

Bye-way History; or, Short Studies of Out-of-the-Way Places. No. 1. Bletchingley. No. 2. Ptaxtole. By J. Tavenor Perry. London: B. T. Batsford (in progress).

These appear to be the first two of a series of small illustrated pamphlets on out-of-the-way places which possess architectural and archæological interest. The first examples give us every reason to hope that the series will be continued. They put together, in about thirty pages each, information about places which few persons know anything about, but which are worth attention. The pamphlets are illustrated with a number of small but excellent sketches.

TRADE CATALOGUES, &c.

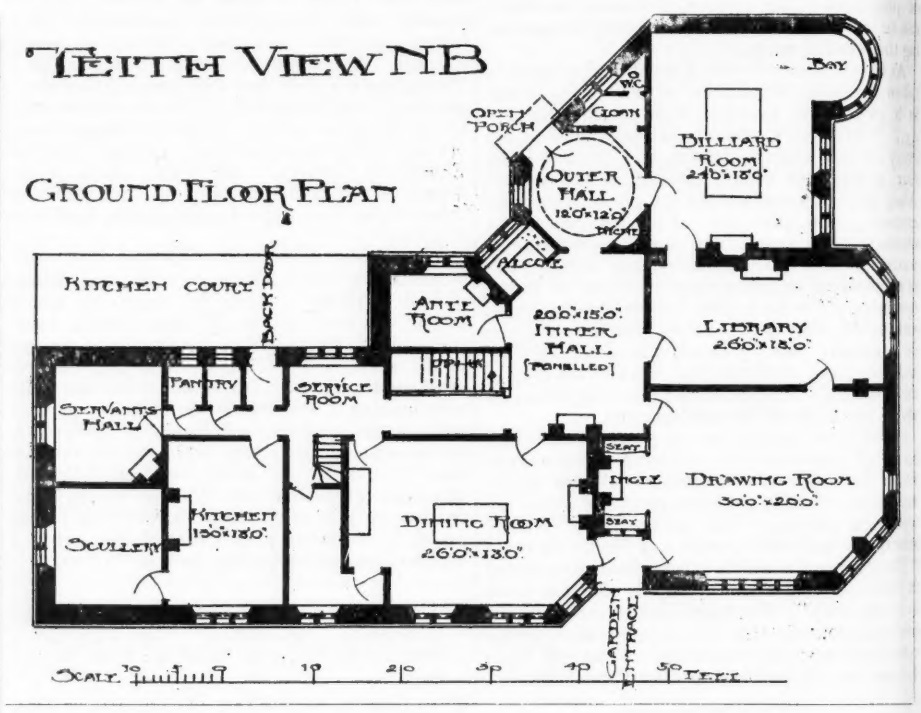
Messrs. J. Sagar & Co. send us their catalogue of wood-working machinery, one of the most finely-got-up catalogues we have ever seen, containing admirably-executed engravings of the many varieties of complicated machines made by this firm for wood-working, with description on the opposite page, the whole printed and got up with the highest finish. Among the machines illustrated may be mentioned the balancing machine for balancing moulding and revolving cutters, so that they may not only be of equal weight generally, but have the weight equally distributed in their substance—an important requirement for clean and steady working. The accurate balancing of working parts is a point which, we are told, receives special attention in Messrs. Sagar & Co.'s machines. Other illustrations include a type of horizontal engine, specially made for driving wood-working and saw machinery, with a variable cut-off governor to secure regularity of speed under varying loads, and proportion the supply of steam to the work being done; various saw-benches; combination machine for joiners' work; rope-feed and roller-feed circular-saw benches; the dimension sawing-machine for sawing to accurate dimensions with or across the grain; a large variety of machines for heavy sawing work; the colonial log frame, for use in the colonies for opening out logs; Wright's patent band-saw guide, in which contact with the saw is taken by a rotating disc, so that there is no friction or heat; combined band and circular saws; the cheap and convenient



PLAN OF PRINCIPAL FLOOR

Plan of Gosford House, showing in the right wing the Plan of Staircase illustrated in lithograph.

pillar band-sawing machine; a number of patents of band-sawing machines of more elaborate kind for heavier work; fret-saw machines; planing and shaping machines; mortising, tenoning, and boring machines, &c. In addition to the description of each machine and its special duty, is a small table at the foot of the page giving the principal statistics of the machine; as, in the case of a planing machine: "Width will plane, 12 in.; diameter of pulleys on countershaft, 8 in.; revolutions per minute of countershaft, 800; approx. nominal H.-P. required, 1½," these being arranged in tabular form, with the code word for the machine added. The catalogue is indexed, and a list is given of telegraphic code sentences in use by the firm. With its illustrations and descriptions the catalogue makes quite an interesting compendium of information as to wood-working machinery, and may be studied with advantage even by those who have no commercial use to make of it.——Messrs. Macdowell Steven & Co. (London) send us their new illustrated catalogue of register-stoves, tile-stoves, tile panels and hearths, chimney-pieces, &c. Among the grates the "Radiant Grate" is well contrived for making the most of the heating power and avoiding down-draughts. The fault of nearly all the patterns of ornamental iron grates, mantels, and over-mantels is over-ornamentation. The simpler designs are the best, but there are not many of them. We presume there must be a demand for this kind of over-ornamented cast-iron work, or manufacturers would not go on producing and illustrating it; but it is a complete mistake from the architect's point of view, and if manufacturers would get more designs of a less pretentious kind, made by those who know how to design for cast-iron, they would probably find their account in it in the long run. The wood-mantel fire-places are much better in appearance, and many of the designs, shown in photographs, are in good taste and very pleasing. The coloured tiles illustrated also include some very pretty work. On the other hand, the designs in elevation for marble chimney-pieces are as poor as they can be; they represent the taste of thirty years ago, when taste in this kind of thing was at its lowest ebb, and one must feel surprised that any large firm at the present day should not at least be better informed than to offer such designs as these to the public. ——Mr. Edward Wood (Manchester) sends a useful catalogue of constructional steel and iron-work, consisting of sections of roofs, elevations of bridges, steel stanchions, sections of iron and concrete fireproof flooring; rivet-girders, fire-proof structures, iron staircases, &c.——Messrs. Keeling, Teale, & Co. (London) send us their catalogue of "artistic hammered iron," consisting mainly of lamps, brackets, and fire-irons. The drawings are not very good, and perhaps do not do justice to the real appearance of the articles, as the engraved ones mostly produce a better impression than those shown in the lithographed drawings. The work appears up to a fair standard in general style,



though it is hardly what would pass for artistic design in the more specialised sense.——Messrs. Bourne & Grove (Worcester) send a catalogue of mouldings and joinery work, containing a variety of useful sections of mouldings; of the designs of other work the less said the better, except some of the turned balusters, of which some are good patterns and would look well in execution—Nos. 4, 5, 6, 16, 17, and 22, for instance.——Messrs. Dorman Long & Co. (Middlesbrough) send a very businesslike catalogue of sections of steel girders, with detailed information as to weight, coefficients of stress, dimensions of every portion, lengths kept in stock, &c. Three different factors of safety are given, representing 10·6, 8, and 6·4 tons tensional strain per square inch of section, or practically one-third, one-fourth, and one-fifth of breaking strain. Some useful suggestions are made as to the construction of steel-joist floors. The steel is all made by the "Siemens-Martin Open Hearth Acid Process."——Messrs. Measures Bros. (London) send a small pocket catalogue of sizes and sections of steel girders, with sizes and estimated strengths for various bearings; the catalogue also includes plate-iron and angle-iron, statistics as to breaking and crushing loads, and as to weights per foot of angle and tee-steel and round and square iron.——The "Art Memorial Company" (London and Beckenham) send a book of photographs of marble monuments which have been carried out by them, which show an endeavour to produce a correct style of work in marble monumental erections of an architectural kind; they are fairly good, but some of the Gothic examples are rather overdone with carving; the Classic ones are the best.

Illustrations.

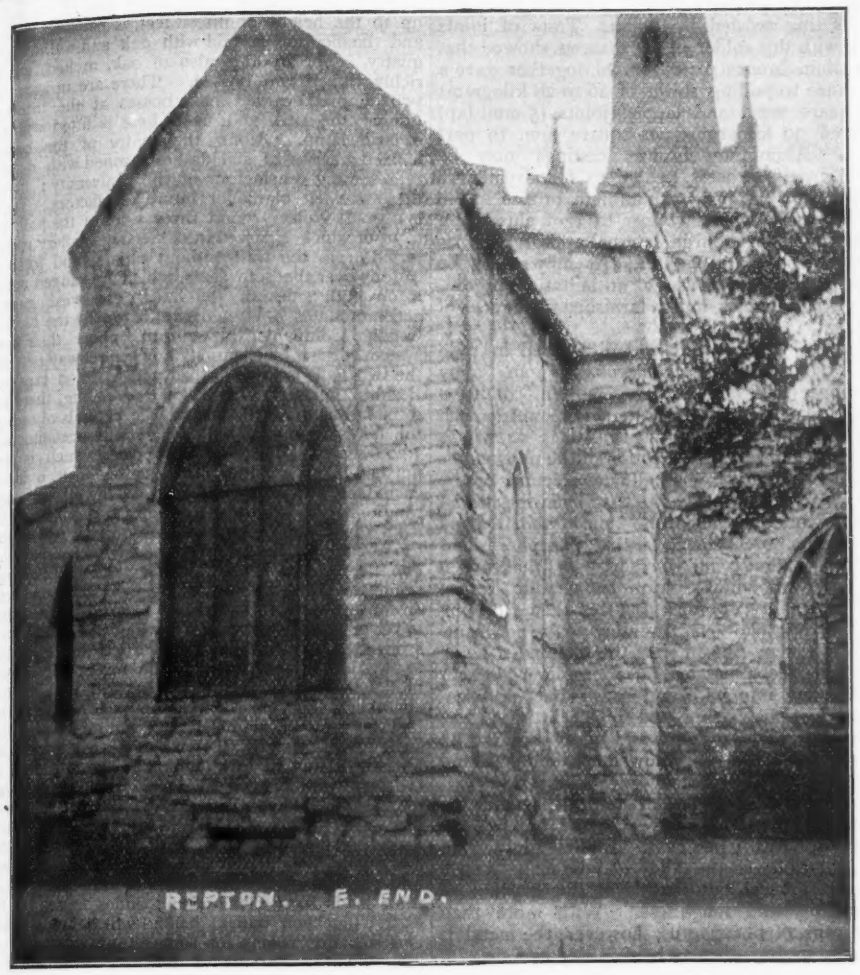
GOSFORD HOUSE.

OUR illustration, taken from a drawing in this year's Royal Academy Exhibition, gives a view of the staircase hall in Gosford House, the Earl of Wemyss' residence on the Firth of Forth. The pilasters, cornices, and arches are of Caen stone; the columns, panels, and balusters are alabaster.

The builders' work was done by Messrs. W. & J. Kirkwood, of Edinburgh; the steel domical roof by Sir W. Arrol & Co., of Glasgow; the stone and marble work by Messrs. Farmer & Brindley, of London; and the canvas plaster ceilings by Messrs. G. Jackson & Sons, of Rathbone-place. Mr. William Young is the architect.

"TEITH VIEW," DOUNE, N.B.

THIS house was designed to suit a peculiar site on a bend of the Teith, having very fine views in one direction only. The house was accordingly placed angle on to the view, and as many rooms as possible planned to command it; the principal entrance and offices being behind.



Church at Repton, Derbyshire; showing square-ended Saxon chancel, as mentioned in Professor Baldwin Brown's first Paper on "Pre-Conquest Architecture" (page 217 ante). From a Photograph. (*See also pages 288-9 in present issue.*)

The stone is a rough local sandstone, the slates Tilberthwaite green.

The architects are Messrs. Niven & Wigglesworth, and the drawing was exhibited at the Royal Academy of this year.

A SMALL TOWN HOUSE.

This design does not need much explanation, but it might be pointed out that my endeavour was to express as far as possible the internal arrangement on the elevation. Thus, I think it would be readily inferred that the windows on the first floor belong to the drawing-room, and that the front portion of the ground story is subsidiary to the family apartments.

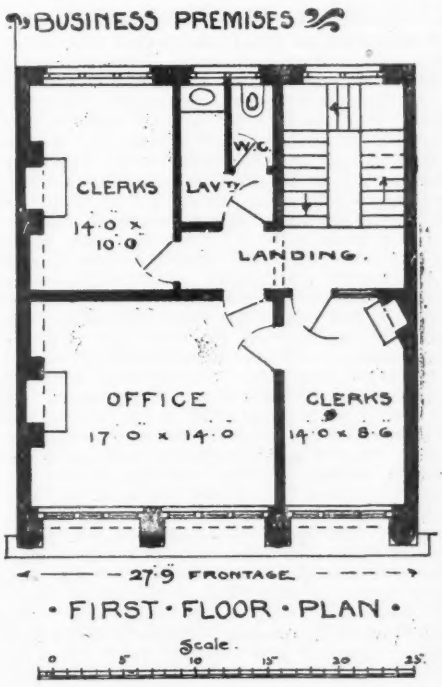
I may mention that there is no other room on the drawing-room level, the remainder of the first floor (consisting of bedroom, bath-room, and lavatory *en suite*), being reached by a short flight of steps corresponding with that in the ground floor corridor.

Herbert F. T. Cooper.

PROPOSED BUSINESS PREMISES.

This is a sketch for proposed business premises, by Mr. Frank B. Cooper. The upper part of the building is devoted to suites of offices, the ground-floor being taken up with a shop. The materials proposed to be used are Portland stone and red bricks.

The drawing was exhibited at the Royal Academy in 1894.



CHURCH AT REPTON.

The accompanying reproduction from a photograph represents the present condition of Repton Church, one of the churches, originally Saxon, referred to in Professor Baldwin Brown's articles on "Pre-Conquest Architecture" now appearing in our columns. It shows the Saxon (or "Pre-Conquest") masonry with the late Gothic window inserted in it.

ARCHITECTURAL SOCIETIES.

The Royal Institute of British Architects.—The first general meeting (ordinary) of the Session 1895-96 of this Institute will be held on November 4, when Mr. Francis C. Penrose, F.R.S., President, will deliver the opening address of the Session.

Northern Architectural Association.—On Saturday last about thirty members of the Northern Architectural Association met at Monkwearmouth Station and drove thence in brakes to Monkwearmouth Church. Visits were also made to the Chester-road Board Schools, St. Hilda's Church, and St. Ignatius' Church (the gift of Bishop Lightfoot), where the Vicar showed and explained the new reredos to those present.

Conservative Club, Cardiff.—New premises for the Conservative Club at Cardiff were opened on the 16th inst. The contractor for the building has been Mr. James Allan, while the architects were Messrs. J. P. Jones, Richards, & Budgen.

The Student's Column.

METALS USED IN BUILDING.—XVII.

COPPER ALLOYS (*continued*).

Bronze.

This is an alloy of copper and tin in variable proportions, with other metals such as zinc, lead, and silver in minor degree. The last-mentioned ingredients, however, should never be present in sufficient quantity to materially affect the character of the alloy as a more or less pure admixture of copper and tin. When they are, and the general character of the substance is altered, it is usual either to qualify the term bronze, or to use an entirely different name. We will first of all describe bronze as commonly understood, and then refer to its varieties. The average composition of true bronze is fixed at about nine parts copper to one of tin, though this standard is frequently not adhered to at the present time.

Bronze has been in use since pre-historic times; it was probably introduced into Europe either from Asia or from Egypt. The ancient Egyptians were specially adept in its manufacture, as is evidenced by numerous bronze instruments and other articles found in tombs. With the ancient Greeks and Romans it was known as χαλκός, or *aes*, synonymous terms, which also applied to brass and pure copper. It is almost impossible, from the last-mentioned circumstance, for us to be certain which of the three metals, bronze, brass, or copper, ancient writers were referring to on specific occasions. Bronze weapons and other objects were in use by primitive man in Britain, and in general the employment of the metal in north-western Europe dates from pre-historic times. It should be remarked, however, that what is commonly known as the "bronze age" differed in its epoch in various parts of the world. It is quite certain that whilst one "nation" was in its "stone age," others were in their "bronze age," and so on—so that the term is only relative, and does not refer to a fixed epoch. It is reasonable to assume that bronze has evolved from the use of copper; the latter metal was found too soft or too malleable to be of the greatest service in making weapons, and it was ascertained that the addition of a small quantity of tin wonderfully increased its hardness and usefulness. Notwithstanding the peculiar adaptability of copper for making utensils and beaten work, we find that on the whole bronze was preferred. Not so, however, during the "Gothic" period of the twelfth, thirteenth, fourteenth, and fifteenth centuries, when bronze and bell-metal, as well as "latten," or "electrum," were not less known; for the majority of the admirably-wrought objects for church use, such as reliquaries and mountings were of nearly pure copper.

Again, during the Renaissance, and subsequent period of decline, copper in beaten work was much used in buildings; as also for works of sculpture in low and high relief, and for the formation of figures on a solid core. But we are anticipating slightly.

To return to the varieties of ancient bronze, it may be said that many were used by ancient sculptors and founders, and several have curious histories. The *Aes Corinthium*, for instance, is stated to have been accidentally formed during the burning of Corinth by Lucius Mummius (B.C. 146), by the fusion of various metals, chiefly bronze, but intermingled with silver and gold. This mythological history of the metal is regarded as extremely improbable, however, in view of recent research, and Corinth bronze was in all likelihood the outcome of experiments on well-proportioned mixtures of metals prior to the burning of the city alluded to. Pliny has, of course, left us some particulars concerning the bronze of sculptors, but he does not appear to have had the entire confidence of metallurgists of his day who (like those of more modern times) evidently dealt in secrets. The composition of certain bronzes given by Pliny are consequently of an impossible character. That fact does not altogether impair his description of the metal, and we learn that there were three distinct varieties of Corinthian bronze. The two most important were the white (*candidum*), so-called from the high proportion of silver in its composition; and the golden, the exact composition of which is doubtful. The *hepatizon* was a reddish-chocolate coloured variety of bronze, most probably free from zinc, and contained a smaller proportion of tin than the varieties of Corinthian bronze. The liver-colour of its exterior was no doubt the result of some

secret "pickle." Probably no kind of bronze was in higher repute in ancient times than the *Aes Deliacum* from the Island of Delos.* Artists and those requiring work in bronze flocked to the island from all countries. Myron was the great patron of the Delian alloy, which nowadays is regarded as being too high in tone. The bronze made at Ægina rivalled that of Delos, and was adopted by Polycleitus for his works in metal.

The composition of bronze in use during the Byzantine period must have varied considerably, judging from the different colours of the metal handed down to us. According to Theophilus zinc was largely employed in the bronzes of the eleventh century. In the earlier period of the Renaissance artists were commonly their own founders, hence the bronze used was mostly of good quality — there was no disposition on the part of the "manufacturer" to cheapen the metal by mixing it with an inferior alloy, the sole object, so far as the casting was concerned, was to produce a sound piece of work, with a rich even surface.

It is a remarkable fact, that in spite of the great attention given in recent years to copper-tin alloys, none give greater strength nor a keener cutting edge than those of similar composition to the bronze used by the Greeks and Romans for specific purposes. The result was and is brought about by hammering, as well as hardening the metal by heating and slowly cooling it. All copper-tin alloys may be made to take a high polish, when they possess a somewhat waxen-metallic lustre, and fuse at moderate temperatures. Mr. Hiorns, in his "Mixed Metals," p. 158, remarks that the great feature of modern bronzes is the substitution of triple and quadruple alloys for the old dual alloys. French bronzes nearly always contain the metals copper, tin, lead, and zinc, and occasionally small quantities of nickel, arsenic, antimony, and sulphur. Zinc used in small quantity in bronze is beneficial, as in casting the metal runs thinner and is freer from blowholes; if too much of that metal be added, however, the result is the production of a species of brass rich in tin. From that circumstance the proportion of zinc should not exceed 2 per cent., when great tenacity and elasticity are desired as important factors in the alloy. A small quantity of lead added to bronze makes the latter slightly more malleable, but it does not usually mix well. Iron is useful in bronze alloys where the prime object is to increase the resistance of the metal to wear and tear, as for certain machinery purposes.

Aluminium Bronze.—This is a variable alloy of copper and aluminium, but the proportion of the latter metal may not exceed 60 per cent. nor fall below 30 per cent., as hardness, brittleness, and a crystalline structure are then set up. Notwithstanding this, however, the proportion commonly used is about 10 per cent. aluminium. For large castings French metallurgists frequently employ only about 2 to 3 per cent. aluminium. It has been known for many years that by their union these metals mutually harden each other, for just as copper increases the hardness of aluminium, so aluminium in small proportions increases the hardness of copper. The 10 per cent. aluminium alloy is usually regarded as the most useful for commercial purposes. Mr. Hiorns remarks that it is very hard, can be beaten when cold, but better still when hot, and may, in these physical properties, be fitly compared with iron; it is also very ductile. Its general chemical behaviour differs but little from other important alloys of copper; however, it has been found to resist sea-water and sulphuretted-hydrogen better than most of them. Its tenacity is equivalent to that of steel, and the metal has special use for journal boxes.

It is almost universally laid down that in the manufacture of aluminium bronze a very pure copper must be used; hence scrap cannot be advantageously employed. Mr. R. L. Packard reports † that great tensile strength resulted from the admixture, by American manufacturers, of 10 per cent. aluminium with 90 of pure copper; and it is specially suitable for bronze ornament and decoration in buildings, being practically noncorrodible. The soldering of copper-aluminium alloys, especially where a large percentage (say 10 per cent.) of the last-mentioned metal is present, is not an easy matter. Up to 5 per cent. it may be readily soft-soldered with ordinary tin solder; when the proportion of aluminium is much increased the alloy has to be coated with copper at the points to be united. Hard soldering, naturally, does not present such difficulties, and the union may be readily effected by a metal composed of 52 parts copper, 46 parts zinc, and 2 parts tin, assisted by borax. Tests of joints made with this solder at Neuhausen showed that aluminium bronze plates butted together gave a resistance to pulling strain of 26 to 28 kilograms per square mm., and lapped joints (5 mm. lap) required 39 kilograms per square mm. to part them. Aluminium bronze castings may be united by the process known to foundrymen as sweating, or burning. Aluminium bronze in the proportion of 9 parts copper to 1 of aluminium closely resembles gold in external appearance, but is much harder and lighter. As may readily be anticipated, it has its uses as an imitation of gold, though it becomes much tarnished in course of time.

Phosphor Bronze.—It was discovered in 1858 that by adding phosphorus to an alloy of copper and tin in the molten condition the physical properties of the bronze were much improved, and the resulting metal is known as phosphor bronze. The function of the phosphorus is not so much that of an alloy as a refiner of the metal, and it is remarkable that even the merest trace is often sufficient to effect the desired improvement. The fact is, that phosphorus has a strong affinity for oxygen, so that when introduced in suitable form to metallic oxides, such as tin or copper, it reduces them, forming oxide of phosphorus. An alloy of 5 per cent. tin, ·1 per cent. phosphorus, the remainder being copper, is recommended for rolling purposes, or for drawing into wire and rods; but for ornamental castings, steam and boiler fittings, &c., the tin rises to 7 per cent., and the phosphorus up to ·25 per cent., an alloy much tougher and stronger than the preceding. Where phosphor bronze of great hardness or strength is required, tin may be present to the extent of 9 per cent. and phosphorus 1 per cent. By the addition of more phosphorus the alloy may be made nearly as hard as steel, but that is at the expense of malleability and toughness. With more than 4 per cent. of phosphorus, however, the metal is rendered useless—it may be regarded as a mass of crystallised phosphor tin with copper. Phosphor bronze of the higher grades is used in the building arts, but more particularly in connexion with machinery.

* See "Bronzes," by C. Drury E. Fortnum, 1877, p. 11.
† "Mineral Resources of the U.S. for 1886" (1887), p. 221.

GENERAL BUILDING NEWS.

Rebuilding of Swansea Parish Church.—On Tuesday last week a meeting of the Rebuilding Committee of the Swansea Parish Church was held at the National Schools, Oxford-street. The plans previously prepared by Sir Arthur Blomfield were subsequently discussed, and eventually it was decided that the architect referred to should prepare working plans to be submitted to a future meeting for adoption, after which tenders will be invited for carrying-out the work. It is not expected, however, that the work will be proceeded with before the New Year. The whole scheme will cost 24,000*l.*

Aberdeen University Extensions.—An extensive scheme of enlargement of the Aberdeen University has been inaugurated this week. The University was founded 400 years ago, but the quatercentenary will not be celebrated till all the buildings are completed. Through the munificence of the late Dr. C. Mitchell a new graduation hall and tower have been included in the scheme, and are to be called the Mitchell Hall and the Mitchell Tower. Two of the departments included in the extension scheme, anatomy and surgery, are also finished, and have been opened this week, but other buildings which comprise the extension are far from complete, and may not be finished for years. Entering by the door in the centre of the quadrangle under the Mitchell Tower is the old staircase, which leads to the former hall of Marischal College, now transformed into a picture-gallery. This room forms an approach to the great Mitchell Hall beyond. The new hall measures 116 ft. by 40 ft., and 42 ft. high, the long vista of nearly 300 ft. produced by the two halls and staircase having a striking effect. At the east end of the hall there is a large window filled with Perpendicular tracery. This window fills the entire end of the apse, and measures 28 ft. wide by 32 ft. high. Dr. Mitchell caused it to be filled with stained glass representing, by means of heraldry as well as figure subjects, the history of Marischal College. The glass of the window was designed and executed by Mr. Spence, London, assisted in the heraldic scheme by Mr. P. J. Anderson, University Librarian. In addition to the large east window, the hall is provided with ten side windows, five on each side, filled with granite tracery and stained glass, with heraldic devices representing the history of King's College. The walls are built of granite ashlar, the inside surface being dull-polished and set in gilt pointing. The granite used for the interior is from the Corennie Quarries. The mouldings at the windows and arches, also of granite, and the shafts of the pillars, both at the pillars and the piers between the windows, are of polished red granite. The lower part of the wall, up to the height of fifteen feet, is panelled in oak, and the flooring is laid with oak and walnut parquetry. The roof is also of oak, arched, and is richly ribbed and bossed. There are upwards of two hundred carved oak bosses at the intersection of the ribs, and each boss is fitted with an electric lamp. Along the centre of the ceiling is fixed a series of shields emblazoned with devices representing benefactors of the University; five of these are left blank for future benefactors. There is a small gallery round three sides of the hall, the front of which is carved in oak. The gallery is projected from the wall without pillars, and forms a canopy over the sofa seats, which are ranged under it on both sides of the hall. The west gallery accommodates a large organ, made by the Electric Organ Company, Birkenhead, upon their new system, driven by electricity. The archway between the two halls is to be draped with painted tapestry. Besides the electric light on the ceiling, there are to be lights grouped around the capitals of each of the ten side pillars. The hall will accommodate 1,200 seated. The Mitchell Tower, which is also finished, is in granite. It measures 39 ft. 6 in. on each face, and from the level of the upper quadrangle it rises to the height of 230 ft., and 250 ft. from the lower. Four octagon turrets rise to the top at each of the four corners, each terminated by two tiers of crocketed pinnacles, the upper circling round the tapered points, being also richly crocketed. In the centre of this group of four turrets, a central tower or pinnacle rises. This pinnacle is also constructed of granite, and is carried up from the foundation in the centre of the tower. It accommodates the staircase, and at its top is a look-out chamber. The clock faces the quadrangle. The dial is 7 ft. in diameter, and illuminated. The striking bell weighs 34 cwts., and was supplied by Messrs. Evans, of Birmingham. The four sides of the tower are pierced by three windows of large dimensions, filled with Perpendicular tracery. The floor under the hall, on the level of the quadrangle, contains a suite of rooms for the accommodation of the Students' Union. Entering under piazza at the north side of the tower, a corridor leads to a cloak-room; dining hall, 55 ft. by 25 ft.; luncheon buffet; behind which are situated two stewards' rooms for service; and above, in an intermediate floor, is a dwelling-house for the steward. Beyond the buffet, in continuation of the same corridor, is a billiard and smoking-room; then the Students' Representative Council room; and at the extreme east end a large hall with gallery on three sides, provided with a stage for dramatic or musical performances, and division lobbies at each side on the model of the House of Commons. This room measures 40 ft. by 60 and 20 ft. high, and is intended to serve the purposes of a reading-room and news-room as well as a concert-room and debating-hall. The floor of the Students' Union is of pitch-pine. The windows are glazed with cathedral-glass and lead quarries. All the rooms are heated and supplied with fresh air by means of Key's system of mechanical ventilation. On the floor under the Students' Union, on a level with the lower quadrangle, is the new anatomy department. The dissecting-room measures 75 ft. by 53 ft., and 25 ft. high. The walls from floor to ceiling are lined with ivory-coloured glazed tiles. The floor is oak on the block-flooring system. The surgery department, which is also finished and ready for use, consists of a lecture-theatre, 28 ft. by 52 ft.; practical room and museum, preparation and instrument room, diagram-room, and professors' rooms. The room is lighted from the roof, and, like the other departments, is ventilated and warmed on the mechanical system, and fitted with electric light. Adjoining the dissecting-room is a laboratory, 40 ft. wide by 50 ft. long; a smaller one separated by means of a revolving partition, Professor's private laboratory, and Professor's own room, a lecture-room, 40 ft. by 35 ft.; and a museum, 44 ft. by 30 ft. In addition to these there is an anthropological museum. There are three large departments far advanced. When these are finished, the whole of one side of the quadrangle will be complete as far as the present scheme goes, leaving the opposite side of the quadrangle still to be dealt with. The cost of the whole works, as already commenced, is 104,225*l.* The whole of the architectural work in connexion with the enlargement and remodelling of the buildings has been carried out by Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen. The contractors for the work in connexion with the erection and decoration of the hall were:—Mason, Mr. John Morgan; carpenters, Messrs. Watt & Clark; slaters, Messrs. James Stephen & Son; plumbers, Messrs. John Blaikie & Sons; painter, Mr. John Whyte; electric-lighting, Messrs. Shirras, Laing, & Co.; ventilating machinery, Mr. Key, Glasgow.

Welsh Church, Treorky.—The new Welsh church which has been erected in Treorky, and which will in future be known as St. Tyfodwg's, was opened on Monday. The church is built of local stone, with brick dressing. The structure will accommodate about 400 persons, and measures 80 ft. by 32 ft., being covered by a one-span roof. The interior consists of a roof of red pine and stuccoed walls. The windows are tinted with cathedral glass. The seats are made of red varnished deal. The church is warmed by two

Musgrove hot-air stoves. The entire cost will be about 1,600*l*. Mr. Jacob Rees, Pentre, was the architect, and the contract was satisfactorily carried out by Messrs. Edward Davies & Sons, Treherbert.

CHURCH, CARDIFF.—The memorial-stone of a permanent church in Wells-street, Riverside, Cardiff, in connexion with the Christ Church Mission, has just been laid. Mr. J. Styles is the builder, the architects being Messrs. T. Waring & Son. The structure will be of Newbridge stone, with Bath stone facings, and the style of building will be Gothic.

SCHOOLS, PENZANCE.—The Penzance Wesleyan Day Schools have just been reopened after enlargement. The plans were by Mr. J. W. Trounson, Mr. W. H. Trounson was carpenter, and Messrs. Alfred & William Trythall were the masons.

SANITARY CONVENIENCE, SHOREDITCH.—An underground sanitary convenience and lavatory, Shoreditch High-street (between Commercial-road and Great Eastern-street), was opened on the 21st inst. by the Chairman of the Vestry of the Parish of St. Leonard, Shoreditch. The convenience is for both sexes, and has been constructed at a total net cost of about 1,800*l*. for the Vestry by Mr. Geo. Jennings, of Lambeth Palace-road, under the supervision of the Paving and Sewers Committee. The convenience is 60 ft. by 15 ft., and its floor is about 10 ft. below the surface of the carriageway. The men's department is situate at the northern end of the refuge protecting the convenience, and it contains twelve urinals, six waterclosets, and three lavatories. The women's department, at the southern end of the refuge, includes three water-closets and one lavatory. The staircases are 4 ft. wide, and the steps are faced with Mason's safety treads. The internal fittings of the urinals are of Jennings' Radial basin stalls, and the water-closets are of syphonic discharge apparatus, "The Closet of the Century" in the men's department, and "Midland" pattern in the women's department. Both divisions of the convenience are ventilated by means of a "Blackman's" fan, working by water-power, the water, after having finished its work in the fan, being used for flushing the urinals, &c. The floors are paved with black and white vitreous tiles. The roof of the convenience is constructed of rolled girders, fixed upon granite stone frames. There are three lamp-columns, which support five Sugg's lanterns. The lamp-columns and the iron guard-posts were cast by Messrs. Pontifex & Co. The plumbing work has been carried out by Mr. Arthur Walter, silver and bronze medallist of the Worshipful Company of Plumbers. A charge will be made for the use of water-closets and lavatories. Mr. T. Ridyard Roscoe is the Surveyor and Engineer to the Vestry.

UNION CHURCH, CLYDEBANK, N.B.—The new Union Church recently completed at Clydebank was opened on the 10th inst. The new church is of Late Gothic style, built in red Locharbriggs sandstone, with light green slated roof. The main front faces Dumbarton-road, and the central gable here rises to a height of over 60 ft., flanked on each side by octagonal staircase turrets, with steep red-tiled roofs, each over 70 ft. high. The main doorway is moulded and carved, and the gablet over it is enriched with moulded and cusped panelling. The centre of the gable has a traceried window of large scale, divided by mullions and transomes, and the spandrels between the head of the window and the side shafts are filled with a carved enrichment in vine and oak leaves. A band of cusped panelling extends across the gable above this window, and the centre is carried up as a canopied niche, over which a foliated cross forms the terminal feature. Side entrances are placed at the base of each of the stair turrets. A series of cusped-headed windows light the staircases, and over these a band of rich carving is carried round, broken at the corners by projecting grotesque gargoyles. The upper stages are of open stonework tracery, forming bell chambers, and are roofed with steep conical roofs covered with red tiles. The side elevations have a somewhat similar treatment to the front, and are divided into four bays each, the lower stage with three-light cusped-headed windows, and the upper with a series of four-light traceried windows, all of varied design, placed between broad, plain piers of masonry. The organ-chamber is continued beyond the main building, in chancel form, with a four-light window high up in the gable. The hall buildings form a lower group to the west of the main front. Internally the church is divided into nave and side aisles by massive moulded stone arches of very wide span, resting on stone piers, one on each side. The pulpit gable is pierced by a triple arch, carried on clustered columns, with carved caps, the pulpit being placed in front of the central arch, with choir behind, the two side arches arranged for organ-chambers. The ceiling is lofty, and the roof of massive construction, the whole main timbers exposed, and the ceilings in wood panelling, all stained to a dark oak tint. There are side and end galleries, carried on beams behind the columns. The gallery-fronts are finished in oak. The total number of sittings is 850, and there is also a suite of rooms for congregational work, including a hall seating 350, two large class-rooms, session-house, vestry, ladies' room, kitchen, cloak-rooms, &c. The finished cost is expected to be about 7,000*l*. The architect, from whose designs the whole work and fittings have been executed, is Mr. John B. Wilson, Glasgow, whose designs were selected by the assessor from those invited in competition, and the work has been executed by the following contractors:—Mason, D. Winton, Duntocher; wright, Geo. Ferguson, Glasgow; slater, Latto & Son, Clydebank; plasterer, J. M'Donald & Son, Kirkintilloch; plumber, Stalker & Dave; glazier, L. Adam & Co.; gas-piping, D. and G. Graham; gas-fittings, Milne & Son; upholstery, Gardner & Son; carving, Dawson and Sheriff; railings and gates, G. B. Smith & Co., Glasgow; painter, J. Taylor, Clydebank; and heating, Boyd & Sons, Paisley.

POST-OFFICE, PORTADOWN.—The contract for this work has been entrusted to the firm of Messrs. Collen Bros., Limited, of Portadown and Dublin, the cost of which will considerably exceed 4,000*l*. The site is in the centre of Bridge-street, and comprises a frontage of 60 ft. to that street, and a depth of 150 ft. along the new street which runs at right-angles to Bridge-street. The superstructure will be built of Ruabon red brick, with cut-stone dressings, the piers, frieze, and entablature, as well as the principal cornices, being executed in cut-stone. The ground floor contains the public office, measuring 25 ft. by 18 ft., in connexion with which is the postmaster's office. The architect for the building is Mr. Robert Cochrane.

TOWN HALL, MORLEY, YORKSHIRE.—The new Town Hall at Morley was opened on Wednesday last week. The building is in the Classic style, and the stone used in its construction has been obtained from the local quarries. The site on which it has been erected, from the designs of Messrs. Holtom & Fox, of Dewsbury, is between Albion-street and Wellington-street. The structure is on the lines of a parallelogram, its dimensions being 140 ft. by 146. The various floor levels of the basement are arranged to meet the levels of the streets. To the left on entering are the offices of the Town Clerk and the Borough Accountant, and to the right those of the Borough Surveyor and the Inspector of Nuisances. Along the north corridor is the Borough Court, containing the usual accommodation, including a public gallery, and entered by swing doors, which are half-glazed in coloured glass. There are, adjoining the court, rooms for the magistrates, for their clerk, and for solicitors and witnesses, and also offices for the magistrates' clerk. The Town Hall proper is 90 ft. in length, 46 ft. in width, and 36 ft. high, and the main entrance is from the central hall, direct from Queen-street, though there are two entrances also from Albion-street. At the northern end of the hall there is an orchestra extending right across the room. At the opposite end a large gallery, with a balcony on each side, has been erected, so that there is seating accommodation for 1,200 persons. The second floor is approached from the main staircase, and from the large waiting-hall, or gallery, access may be had to all the rooms on this floor. At the south end, near the corner of Queen-street, there is a banqueting or reception-room, with a small room attached. At the opposite corner is the Council Chamber, and here, as in the Borough Court, the interior has been panelled and dadoed to the height of 5 ft. There have also been provided a councillors' ante-room and retiring-room, a parlour for the Mayor, with a waiting-room and a large tea-room. The staircase next the Town Hall communicates with an entrance in Albion-street, and also with the offices on the ground floor, as well as with the gallery and balcony in the large hall. Another staircase on the western side may be used in case of need. There are a large number of rooms for the different Corporation departments, the police-offices and cells. Underneath a portion of the large hall there is a smaller hall to accommodate about 600 persons. The large kitchen is provided with the necessary cooking apparatus, and there are lifts connecting it with the banqueting and other halls. The large rooms will be heated by means of hot-water pipes, and the offices by open fireplaces. Portions of the flooring are coloured blue, and the remainder pink, in encaustic tiles or mosaic, while all the staircases are fireproof, with cleansed stone steps, wood hand-rails, and iron balustrades. The doors are panelled and moulded, and the windows have moulded fixed sashes, with circular heads. The clock in the tower will be lighted by electricity. The total cost of the building is not expected to exceed 36,000*l*.

SCHOOLS, DARLINGTON.—New Day and Sunday-schools are in course of erection on a site in Greenbank-road, Darlington. The new schools, which are being erected for the girls and infants, are in a central and open position in the parish, and are being built from designs and under the direction of Mr. G. G. Hoskins. The new building will accommodate 200 girls and 150 infants. The contractors for the various works are as follows:—Builders, Messrs. McKenzie Bros.; joiner and carpenter, Mr. R. T. Snaith; slaters, Messrs. Wandless & Son; plumbers, &c., Messrs. W. Russell & Son; painters, Messrs. W. H. & W. Hoskins. The total cost of the new buildings including the land is estimated at 2,500*l*.

SCHOOLS, BELFAST.—The new schools in Eastland-street, Shankill-road, which have been built in connexion with St. Luke's Church, Belfast, have just been opened by the Countess of Shaftesbury. The new school building consists of two rooms, each 68 ft. long, by 30 ft. in width, and each having a class-room attached, 36 ft. by 21 ft., which can be shut off or otherwise from the main room by movable shutters. Attached to the school buildings is an extensive playground, with lavatories and other conveniences. The work has been carried out by Messrs. H. & J. Martin, of Belfast, from plans by Mr. Godfrey W. Ferguson, who received assistance from Mr. Herbert Ewart.

CONSTITUTIONAL CLUB, EGHAM.—The Baroness de Worms recently laid the foundation-stone of the new additional Constitutional Club premises at Egham. The work of the additions and alterations is being carried out by Mr. G. Gray, builder, of Egham, from plans by Mr. J. W. Oades, architect.

LECTURE HALL AND SCHOOLHOUSE, DUNMURRY, CO. ANTRIM.—The foundation-stone of school-buildings for Dunmurry Presbyterian Church was laid on the 19th inst. The plan comprises a lecture-hall 54 ft. by 38 ft., with porch and entrance from the main road. There are two projecting wings, which contain, respectively, a porch, with ladies' room, and on the other side a kitchen. The building is executed in Belfast best red brick, with moulded strings and panels of terra-cotta. The sills and keystones are of Dumfries red sandstone. The side walls are divided into spaces by buttresses. Windows, with arched heads and keystones, are placed between them. The wings have small gables, with circular panels and brick mouldings. All the windows will be filled with lead lights and cathedral glass. The roof is carried by strong principals, with iron tie-rods. Special ridge ventilators, with louvred openings, are provided. All the roofs will be covered with best Bangor Countess slates, with red ridge tiles. In the internal fittings pitch-pine is largely used. The heating is by fireplaces on each side wall. Mr. J. M'Roberts, Belfast, is the contractor, and the architects are Messrs. Young & Mackenzie.

SCHOOLS, BRISTOL.—The new girls' and infants' school which has been erected in the parish of St. Michael's, Bristol, was opened on the 19th inst. The building is estimated to cost about 2,100*l*. There are two stories, and the infants' school on the ground floor is capable of accommodating 150, and the girls' school above 120. The premises also comprise two class-rooms, teachers' room, cloak-rooms, out-buildings, and playgrounds. Mr. W. V. Gough has been the architect for the work.

CHURCH SCHOOLS, SHEFFIELD.—The memorial-stones of new church schools at St. Simon's, Sheffield, were recently laid by Lord Milton. The area of site of the new schools, which are to be known as the St. Simon's Blakeney Memorial Schools, including half of Porter-street and Alsop- and Union-lanes, is upwards of a quarter of an acre in extent. Accommodation is provided on the ground floor for 220 infants, and on the first floor for 180 boys and girls mixed. The playground for boys is entered from Porter-street, and that for girls and infants from Union-lane, both of which will be asphalted, and made private by boundary walls 6 ft. high. Externally, the building will be of Sheffield bricks, with red Carlisle stone dressings, and Welsh slating to roofs. Each department will have a schoolroom 40 ft. by 22 ft., large class-room 22 ft. 6 in. by 22 ft., and small class-room 22 ft. by 17 ft. 6 in., all 14 ft. in height, with boarded floors, plastered ceilings, and having glazed pitch-pine divisions so arranged that the school and class-rooms may be utilised as one large room. The schools will be warmed with low-pressure hot water. Messrs. Joseph Mastin & Sons, Mr. John Benson, and Messrs. Charles Chadwick & Sons are the contractors engaged on the work. Mr. Joseph Norton is the architect. The buildings alone will cost about 2,000*l*.

CHAPEL, NEWMARKET WORKHOUSE.—The new chapel at Newmarket Workhouse, which has just been completed and opened, has been erected from the design of Mr. J. Brown, of Burwell, the builders being Messrs. J. Simpson & Sons, of Newmarket. It is of black flint, with white brick and stone dressings, roofed with blue and brown slate, a bell-turret being placed at the western end of the roof. Internally the dimensions of the building are as follows:—Length, 60 ft.; width, 24 ft. The flooring is of wood blocks, except the choir and sanctuary, which are laid with enamelled tiles. The windows are fitted with cathedral glass, and a pitch-pine dado runs round the lower part of the walls. The roof is an open timber one, about 30 ft. pitch from floor-level.

PUBLIC LIBRARY, NEWCASTLE.—The Stephenson Library, in Elswick-road, Newcastle, was recently inaugurated by the Home Secretary, Sir Matthew White Ridley, Bart., M.P. The building, which is 86 ft. by 43 ft., comprises two floors. On the ground floor there is a refreshment-room, committee-room, ladies' reading-room, general reading-room, and lavatory. There is a separate entrance in the centre of the building to these rooms. At the west end is the principal entrance into an entrance-hall, from which is the principal staircase to the upper floor. On the upper floor is the large hall to serve as the library and for meetings. It is 70 ft. by 36 ft., with platform and retiring-rooms. On this floor are also a smaller committee-room and janitor's-room. There is a second staircase adjoining the platform. Externally the walls are faced with red Leicestershire bricks, with dressings of stone and pink terra-cotta, and the roof is covered

with red Ruabon tiles. The internal woodwork is stained canary-wood, except the roof of the large hall, which is of hammer-beam construction in pitch-pine, the ceiling being panelled with moulded ribs. The staircases are in pitch-pine. The whole of the windows have lead glazing in clear glass, except the staircase, which has a stained-glass window. The west entrance is carried up to form a small tower, and in the parapet is a stone shield, on which the arms and crest of Alderman Stephenson are carved. There are three gablets on each of the north and south fronts, and in the centre gablet on the north is a shield on which the city arms are carved. The general contractor has been Mr. Walter Scott; the roof-tiling is by Messrs. Beck & Sons, the plumbing by Messrs. Bland Bros., the painting and staining by Mr. John Gibson, the heating by Messrs. Emley & Sons, Limited, the iron casements for windows by Messrs. Ashwell & Nesbit, the lead glazing by Mr. G. J. Baguley, the door and other fittings by Mr. N. F. Ramsey, the carving by Mr. Howson, and the electric-lighting by Messrs. R. J. Charleton & Co. The whole of the work has been carried out from the designs and under the superintendence of Mr. John W. Dyson, architect, of Newcastle.

Church, Southport.—On the 19th inst. the foundation-stone of the new Church of Emmanuel, Cambridge-road, Southport, was laid. The architects are Messrs. Preston & Vaughan, Manchester. The plan consists of a nave and aisles of five 19 ft. bays, having double transepts on each side. The aisles and transepts are lofty in comparison with the clearstory. The double transepts occupy the two easternmost bays of the nave, and the roofs finish below the level of the clearstory windows, thus leaving the clearstory, with its two long ranges of windows, unbroken from end to end. The choir is placed under a central tower carried by four stone piers, from which arches spring on each side. The tower will consist of a ringing chamber and belfry, and will be 100 ft. in height to the top of the parapet. The outside is to have Runcorn stone dressings and red pressed brick facings; the inside Runcorn stone and terra-cotta dressings, and red and buff brick facings.

The Building Trade, Largs, Ayrshire.—There is a considerable amount of activity at present in the Largs building trade. A beginning has been made with a number of alterations and additions to Curling Hall, which was recently acquired by Mr. William Clark, Newark, New Jersey. Besides additions to the mansion of Haylie, Mr. James Stevenson, the proprietor, is having a new carriage-drive made along the base of the hills behind the house. Another of the more important mansions of the parish, that of Mr. C. S. Parker, at Fairlie, is being remodelled and extended.

New Court-house, &c., at Scunthorpe, Lincolnshire.—Under the direction of the Standing Joint Committee of the Justices, and the Lindsey County Council, a new court-house, superintendent's residence, sergeant's house, cells, and stables have been recently erected at Scunthorpe. The entrance to the court-house is flanked by the justices' retiring room on the north side, and the witnesses' room on the south side. There are three oak doors leading to the vestibule, viz., one for the justices and the other two for the public. The justices' retiring room is 18 ft. by 15 ft. The witnesses' room is 15 ft. by 13 ft.; witnesses will have access to the court without passing through the space allotted to the public. The solicitors and officials have a special entrance from the vestibule to the court apart from the public, and provision is also made for the Press. The dimensions of the court-house are as follows:—Length 55 ft., width 25 ft., and height to ceiling 22 ft. The north and south windows consist each of six leaded-lights with stone mullions. The ceiling is panelled between the five principals, of which the curved brackets rest on stone corbels. The bricks were supplied by Messrs. Spring & Halmshaw, from their Yaddlethorpe brickyard, and the stone dressings from the Ancaster quarries. The ventilating apparatus has been supplied by Messrs. R. Boyle & Son, Limited. The wrought-iron gates and fencing have been supplied by Messrs. Hart, Son, Peard, & Co., of Birmingham. The heating apparatus to the court-house and cells has been supplied and fixed by Mr. William Mowbray, Lincoln. The gas service and fittings have been supplied and fixed by the contractors, Messrs. Wright & Sons, of Lincoln. The prisoners are brought from the cells to the court-house through an entrance-porch on the west side of it. There are three new cells provided, and a day-room, with electrical communication to the cells fitted by Messrs. Wallis Bros., of Lincoln. The drainage is complete in itself and ready for connexion with the new system which the Councils of Scunthorpe and Frodingham must ere long introduce. Large underground tanks have been constructed for storing the rain-water. The plans have been prepared by Mr. James Thropp, the Surveyor of the Lindsey County Council. Mr. R. D. Lockwood, of Scunthorpe, has been clerk of the works.

New Wesleyan Chapel, Wolstanton.—On the 17th inst., the new chapel erected by the Wesleyan denomination of Wolstanton, was formally opened. The chapel is in Late Gothic style. Red bricks are used in the facings of the elevations, and the tracery and dressings are in Hollington stone. The plan of the church is cruciform, having a nave 86 ft. long and 30 ft. wide, exclusive of the side aisles, terminating in an octagonal apse, and with a transept 30 ft. wide and 25 ft. deep. The floor inclines towards the rostrum, and is furnished with open benches; pitch-pine has been used for the woodwork, and the windows are of stained glass leaded. The heating is by hot-water. The chapel is seated for 684 persons, and the orchestra will accommodate fifty; but on special occasions the accommodation can readily be increased to admit 1,000 persons. The principal window is to be filled with stained glass by Messrs. Camm & Co., Smethwick, Birmingham. The work, the cost of which will be about 4,000*l.*, has been carried out under the direction of the architect, Mr. A. R. Wood (Wood & Hutchings) of Tunstall and Burslem. Mr. G. A. Foster, of Longport, has been the contractor.

SANITARY AND ENGINEERING NEWS.

Leeds Waterworks.—A meeting of the Waterworks Committee of the Leeds Corporation was held on the 11th inst., when the Engineer (Mr. Hewson) reported that the works at Eccup were progressing satisfactorily, the quantity done being in advance of the contractor's time. The quantity of water in the reservoirs was equal to seventy-nine days' supply, as compared with fifty-eight days' supply at the corresponding period of last year. The question of water supply to the highest levels at Beeston was under consideration, and the engineer stated that no real improvement could be made except by laying a main from the high-level pumping main at Whingate. The laying of this main would cost 1,000*l.*, but it would form part of the mains which would have to be laid in connexion with the high-level service which it is intended to bring from the Washburn valley by new reservoirs to be built there. As these reservoirs will not be completed for about seven years, the engineer recommended that this work should be done at once, and so afford relief to the district. In consequence of the great necessity for improving the water suppy at Beeston, the committee agreed to the suggestion, and the work will be proceeded with.

New Railway in Weardale.—The new Wear Valley Extension Railway, from Stanhope-in-Weardale to Wearhead, a distance of about 9½ miles, has just been opened. After the cutting of the first sod by Sir Joseph Pease on October 21, 1893, the contracts were let for the work, which included the building of twenty bridges, the erection of stations at Stanhope, Eastgate, Westgate, St. John's Chapel, and Wearhead, and over two miles of sidings, in addition to the main line. In the construction of the line there have been used 126,000 cubic yards of earthwork, 8,900 cubic yards of masonry, 1,400 of brickwork, and 732 tons of ironwork. The customary Board of Trade inspection of the new line took place on the 18th inst., when Colonel Addison, R.E. (Board of Trade Inspector), was accompanied by the engineer of the new line, Mr. E. W. Lyall, C.E., of Darlington; the architect, Mr. W. Bell, of York; Mr. W. J. Cudworth, North-Eastern Railway engineer (Darlington), and others.

FOREIGN AND COLONIAL.

France.—The public exhibition of the competition designs for the rebuilding of the Cour des Comptes opens to-day, at the Palais de l'Industrie, and will be open till the 28th. The award will be given on the 30th.——The group in bronze of an eagle and vulture fighting over the carcase of a bear, which was left to the City of Paris by the late M. Caïn, the sculptor, is to be erected in the square Montholon, on an artificial rockery whence a fountain will issue.——The new bridge over the Seine at Puteaux, between the mairie of that town and the Ile Rothschild, is to be opened next month.——An observatory is to be established at the top of the mountain of Roche des Verts, near Annonay, which rises to a height of 1,000 mètres.——A new Fine Art School has been opened with much ceremony at Toulouse.—— The ceramic museum at Sèvres has received an important gift from the Grand Duke Constantine, of Russia, in the shape of a large collection of ceramic objects, including some curious examples of German ware.——An immense bell, cast at Annecy, has just been installed, under the direction of the architect (M. Raulin), in the new church of the Sacré Cœur at Montmartre. Considerable difficulty was experienced in getting the bell up to the top of the hill.——A memorial statue to Pasteur is to be erected at Lille.——A young Parisian sculptor, M. Theunissen, has been commissioned by the Government of Hayti to execute a monument in honour of Pétion, the founder of the Republic of Hayti. The monument will be erected at Port-au-Prince.——A monument in honour of Gustave Nadaud, the song-writer, is to be inaugurated next spring, at Roubaix. M. Cordonnier is the sculptor. The monument will be composed of a lofty stele, supporting a bust of Nadaud, which a winged muse is in the act of crowning. At the foot of the stele is a semi-circular balustrade flanked by two figures representing Music and Song. The balustrade will also be decorated by two bas-reliefs representing subjects from the works of Nadaud.——The Municipal service of Paris has suffered a loss in the death of M. Armand Renaud, Inspector-in-chief of Fine Arts and Public Works, who has died at the age of 59, after a long illness. M. Renaud, who for many years had been in frequent relations with the most eminent artists of the day, had been of great service to the Municipality, and was at once a learned connoisseur and an admirable administrator. He was also known by some excellent literary works, such as the "Nuits Persannes" and the "Drames du Peuple," and wrote, from time to time, fine little poems, of an Oriental character, for Saint-Saëns's music. He has been replaced at the head of his office by M. Ralph Brown, who has been for fifteen years his friend and colleague.——The death is also announced of the Comte de Clermont-Gallerande, who was well known for his pictures of sporting subjects.

German.—A large model of the new Berlin Cathedral is being prepared for the coming Salon. The model will be one-twenty-fifth full size, or to a scale of about half-an-inch to the foot.——The sculptural work for the National Monument at Berlin is now rapidly progressing. Professor Begas is being assisted by several sculptors of repute, who may, however, be considered his pupils. Messrs. Bernewitz and Goetz are his chief assistants.——Everything in connexion with next year's National Industrial Exhibition is being done in a most business-like way, and we now hear that all the German Embassies and Consulates have received instructions from the Imperial Foreign Office to assist the executive committee in their efforts to make the occasion a success. The German colonies of the various capitals will be represented, and every facility given to Germans residing abroad to visit the exhibition. In connexion with the exhibition, a number of hotels are now being erected in Berlin.——The Municipal authorities at Berlin have now definitely decided that asphalte is to be laid wherever possible, in lieu of other kinds of pavements, and all roads to be taken in hand next year will be paved with this material.——The Berlin Municipality continues to elaborately decorate the new bridges over the River Spree, and has now commissioned Professor Siemering to prepare models for a large bronze group for the Gertraudten Brücke.——A large assembly-room has been opened in connexion with the circus at Berlin. It holds 2,000 visitors, and is intended for banquets and dances.——Berlin has had another bequest for the purpose of erecting a foundling hospital by the will of the deceased builder and contractor, Herr Schmidt. The sum is 45,000*l.*——The historical Sans Souci Park at Potsdam is to have its entrances rearranged, so that the Friedenskirche and the mausoleum of the late Emperor Frederick will not be so conspicuously situated as at present.—— Breslau is to have a monument to the deceased Emperor William. Herr Behrens is the sculptor commissioned to carry it out.

MISCELLANEOUS.

Refuse Destructor, Vestry of St. Luke.—In the Annual Reports of the Vestry of St. Luke the most important point mentioned is in regard to the inquiries which have been undertaken with a view to disposing of the parish refuse by means of a destructor. The Committee have, after much deliberation, instructed their Surveyor to prepare a specification for a destructor to be erected by Messrs. Goddard, Massey, & Warner, at a cost of something over 10,000*l.*

Flooding of Basements from a Defect in the Main Drainage System.—We take the following from the "Sanitary Chronicles" of the Parish of St. Marylebone for August and September, prepared by Dr. A. Wynter Blyth, Medical Officer of Health:—"The King's Scholars' Pond Sewer is one of the great main channels under the control of the London County Council; it commences in the Finchley-road, and discharges into the intercepting sewer in the Embankment. It receives now an enormous quantity of sewage from Hampstead, a quantity that, as Hampstead is increasing in inhabited buildings, must be getting each year larger in volume. In any fairly heavy rainfall, this sewer in our parish apparently runs full bore and blocks up all the side sewers running into it. The consequence is, that on such occasions there is a general rush of sewer-gas through the ventilators connected with the system, and a serious ponding back of the drainage. For several years past the basements of houses in Mandeville-place and Wigmore-street have from this cause been flooded, and on September 7 the thunderstorm caused in this way serious inconvenience. The London County Council, through their Engineer, promised as far back as the autumn of 1893, to construct a relief sewer from Paddington to Old Ford, which would remedy the evil complained of, but as yet, this has not been done."

British Trade in Roumania.—On Monday, at the London Chamber of Commerce, Eastcheap, Mr. T. K. Graham gave a lecture on "Roumania: its Financial and Trading Capabilities as a Market for English Manufactures." Mr. Graham said that, while we were sparing no efforts to create markets in as yet undeveloped distant countries, we had in Roumania, within easy reach, an already well-established market, with increasing requirements and

transport facilities, which, owing to our want of knowledge of the constitution and trade capabilities, as well as the manners and customs of Roumania, was being steadily exploited by our competitors. The annual imports into Roumania averaged for the last ten years, in round figures, 15,000,000*l.*; but while in 1883 England supplied 21·88 per cent. of the imported goods, in 1893 there was no increase—if anything, a slight decrease.

Memorial Fountain at Alltwen, Glamorganshire.—A drinking-fountain, erected in memory of the late Mr. Howel Gwyn, of Dyffryn, by the inhabitants of Alltwen, Swansea Valley, was opened on the 19th inst. The fountain is a four-sided structure, of Aberdeen red and grey granite, on a base of local stone, and is surmounted by a lamp. There are to be two continuous streams of water, and on the other two sides are inscriptions in Welsh and in English. The memorial stands in the centre of the village. It was designed and executed by Mr. Dodd, sculptor, of Morriston.

School Board Architects and their Remuneration.—When the West Ham School Board was elected in the early part of the year many of the candidates expressed themselves in favour of the Board having an architect at a fixed salary. In due course the matter was referred to a special Committee, says the *West Ham Guardian*, and, after about six months' inquiries, that Committee recently submitted a report upon the subject. Inquiries were made as to the procedure of other Boards, and it was found that the following Boards paid a commission of 5 per cent. for all work undertaken by the architect, who provided his own staff and office accommodation:—(*a*) Barking, Blackburn, (*b*) Brighton, Bolton, Cardiff, (*a*) East Ham, Huddersfield, Ilford, Leyton, Newcastle, Norwich, (*a*) Plymouth, (*b*) Portsmouth, Salford, Sunderland, Walthamstow, (*b*) Wanstead, and Wolverhampton. In the cases marked (*a*) the Boards provide the clerks of the works; and in those marked (*b*) the architect is specially remunerated for negotiations in connexion with the purchase of sites. The following Boards had special arrangements with their architects, but the total payment in every case was equal to or in excess of 5 per cent. on all work: Birmingham, Bradford, Hull, Leeds, Leicester, Liverpool, Nottingham, Sheffield, and Tottenham. In the case of the London School Board, the expense of the Architect's department for salaries alone amounted to 38,064*l.* against 4,133*l.* paid by the West Ham School Board. The general feeling of the Committee was that the present arrangement was an economical one, as although the architect was paid 5 per cent. on all new work, and 2½ per cent. on all new furniture, he superintended, without remuneration, the repairs executed at the schools (the accounts of the various builders being also checked by him), and conducted all negotiations in connexion with the acquisition of sites. The repair account for the past twelve years amounts to 24,860*l.*, and the cost of the sites to 128,099*l.* The Committee directed the clerk to furnish a return showing the probable requirements of the Board for the ensuing six years, which showed that in all probability an average of three new schools per annum would be required to keep pace with the growth of the borough. The Committee decided to report to the Board that, in their judgment, the present arrangement is the most economical that can be made, and, therefore, the most advantageous in the interests of the ratepayers.—In moving the adoption of this report, the Rev. Father Ring said he had entered into this inquiry with a predisposition against the present arrangement, but, after full inquiry, he had come to the conclusion that no other School Board had a better financial arrangement than they had, which he considered was the most economical arrangement that could be made for the ratepayers. The Rev. A. Jeffrey seconded, and the Report was adopted unanimously.

Glasgow Technical College Plumbing Classes.—The eighth session of the theoretical classes conducted by Mr. David Fulton, and the third session of the practical class taught by Mr. Francis McCulloch, under the auspices of the District Council of the National Registration of Plumbers, Glasgow, commenced on the 11th inst. The opening lecture was delivered by Mr. Peter Fyfe, Chief Sanitary Inspector of the city. Mr. Fyfe, in the introductory part of his lecture, emphasised the absolute need in the present day of combining the theoretical and the practical, of uniting sound theory to sensible practice. The theoretical faddist and the rule-of-thumb man were equally unfitted for problems now confronting us. The continual development of great cities called upon the plumber for the highest exercise of his resource. Even the great water carriage sewage system which the trade had carried to such perfection was capable of much improvement. Again, plumbers were becoming more and more concerned in the efficient distribution of hot water amongst the citizens. In the cold winter months of our climate a free distribution of cheap hot water was really a hygienic consideration. He would be a public benefactor who discovered a simple and efficient remedy for the hot-water starvation prevalent amongst the poorer classes. This involved a complete grasp of the principles of hot water circulation, pressure reduction, friction in pipes, and heat absorption. In the new field of applied hydrodynamics the plumber might also find an important place. In our large cities hydraulic power was now being distributed, and recently there had been inaugurated in Glasgow municipal hydraulic works, from which such power would be dispensed through the principal streets at a pressure of 1,100 lb. per square inch. With this high pressure small rotative motors would come into the market such as impulse turbines to drive light machinery. It would also afford the means of generating the electric current. Mr. Fyfe then discussed the equipment necessary to fit plumbers for the duties of sanitary inspectors, including the power of writing intelligent reports, skill in drawing, and the study of such subjects as ventilation, heating, the elements of chemistry, infectious diseases, and sanitary law. At the conclusion of the lecture, a vote of thanks was accorded to Mr. Fyfe on the motion of Mr. Munro, seconded by Mr. Fulton.

Annual Dinner of Western Plumbers.—The annual dinner of the Worshipful Company of Plumbers (Devon and Cornwall district) was held at Plymouth on the 12th inst. In the unavoidable absence of the Mayor (Mr. W. Law), the Mayor of Devonport (Mr. J. B. James) presided. The loyal toasts having been honoured, the Chairman, in giving "Success to the Worshipful Company of Plumbers and the District Council," said the Guild was of comparatively recent date locally. They were rather late in following the example of their forefathers, who were quite alive to the advantages of combination. During the last twenty-five years there had been a distinct advance in sanitary science and plumbing. He attributed that advance in a great measure to the institution of technical schools, and looked forward to those schools as of the very greatest and most vital advantage to the rising generation. Those who had studied in them were brought *en rapport* with other and newer ideas. Mr. S. Wright (Devonport), in responding, said that in 1884 a combination was formed in London and the provinces, and in 1886 the Plumbers' Company was formed. Their object was the elevation by education and training of the craft, and they awarded to capable workmen a diploma. All plumbers could become registered if they were competent workmen, and he hoped large increases would take place in their membership. Large numbers of plumbers did not join because they thought that the Council was composed of a clique. That could not be, because it is composed of twenty craftsmen, twenty masters, and twenty representatives of the public, chiefly public officials. Mr. S. Hawken having given "The Secretary," Mr. W. J. Addiscott, in reply, said a list of registered plumbers was posted in every public office in the two counties. During the year eighteen candidates presented themselves for examination, and only seven passed. With reference to the Registration Bill which would shortly come before Parliament, there was some misunderstanding abroad. There was no desire to interfere with free action. They simply desired to ensure that no one should wrongly describe himself as registered or certified without being really so qualified. They did not wish to make a close corporation or to interfere with the freedom of any man, whether workman or master. In conclusion he gave "The Visitors." Mr. Harrison, M.P., replied.

City Commissioners of Sewers.—At the meeting of the City Commission of Sewers, held on Tuesday last, at the Guildhall, a motion was made by Mr. A. C. Morton, which led to the reopening of the question of the provision of Baths and Washhouses for the City. Mr. Morton moved "That the Remembrancer and Solicitor be instructed forthwith to take the necessary steps to obtain Parliamentary powers to enable the Commissioners to provide Baths and Washhouses within the City." Mr. John Lobb seconded the motion. The lack of accommodation in the City was illustrated by the case of the swimming-bath in St. Bride's Parish, which could only accommodate 60 out of 400, who were often found applying. The minimum cost was estimated by the opponents of the motion at 150,000*l.*, without counting a heavy annual loss that would have to be met. Mr. Bridgman, F.R.I.B.A., stated that, in his parish (St. Pancras) they had two swimming-baths, one of which did not pay, but the other paid very well. It was almost incredible that in such a city as London they had no bath. Mr. C. V. Hunter, A.R.I.B.A., as a member of a swimming association, pointed out that that Association had prepared a scheme which would make such an establishment in the City of London a paying concern. After a long discussion and several divisions the motion was defeated, the "previous question," moved by Mr. G. Shaw against it, being carried by a considerable majority.——On the recommendation of the Finance and Improvement Committee, the plans for widening Great St. Helens to 12 ft., raising the headway of the arch by 21 in., and rebuilding No. 36, Bishopsgate-street Within, were adopted.—On the recommendation of the Streets Committee upon a petition made at the last meeting for the removal of the struts at No. 28, Bishopsgate-street Within, it was resolved to send peremptory orders to the District Surveyor to have the struts removed within forty-eight hours.

Landlords' Liability for Accidents.—The case recently decided at the City of London Court should serve as a useful warning to landlords and others interested in house property. These are the facts. The plaintiff was calling on a friend when one of the steps leading to the front door collapsed, precipitating her into the area, a fall of 7 ft. 6 in., which inflicted injuries of a more or less serious character. The defendants, who were the landlords of the house in question, repudiated all liability for the accident, on the ground that they were not bound by their agreement with the tenant to repair the premises. Mr. Commissioner Kerr, however, found for the plaintiff, assessing the damages at 6*l.* 7s. 6d.; and reminded the defendants that the verdict was one of considerable importance to them, seeing that other houses belonging to them in the same street were reported to be in need of repairs. Apart from all legal technicalities, it cannot be doubted that Mr. Commissioner Kerr's decision was based upon a common-sense view of the facts of the case. It is perfectly clear that somebody must be made responsible for mishaps of this kind, which are invariably the direct result of deliberate and systematic negligence. If tenants by their agreements bind themselves to keep premises in a proper state of repair, it is clearly the duty of landlords, not only for their own protection, but also for the protection of the public, to insist that tenants shall fulfil their obligations in this respect.

The Architectural Association at Wickham Hall.—Messrs. Geo. Candler & Sons send us a very nicely got-up souvenir of the visit of the Architectural Association to this house on September 28, consisting of a series of photographs of the house, and also a portrait-group of the numerous members of the Association present on the occasion.

Association of Municipal and County Engineers.—The following gentlemen, having satisfied the examiners at the examination held at Manchester, October 4 and 5, the Council have granted them the Association's certificate:—Messrs. J. W. Liversedge, Fulham; C. J. Jenkin, Llandudno; B. Horne, Stourbridge; H. W. Corrie, Birkenhead; A. Boyd, Belfast; and S. F. L. Fox, Batley.

Technical Lectures.—We would draw our readers' attention to the announcement by the Carpenters' Company of their annual course of free lectures on building and sanitary construction. The well-known names of the lecturers are a sufficient guarantee for the quality of instruction which will be given. The dates and subjects of the lectures will be successively announced in our "Meetings" list.

The Architectural Pottery, Hamworthy.—The works originally belonging to this company, which was started in 1854 by the late Mr. Sanders, and after his death disposed of to the company, appear to have been lying idle for some years, the company having failed to make it a success, and the works were closed four or five years ago. The whole concern has now been purchased by Messrs. Carter & Co., who have for twenty years carried on a trade in pottery and encaustic tiles in the neighbourhood, and who intend to remove their Art-pottery branch from their works at the West Quay-road to Hamworthy. It will no doubt be a satisfaction and a benefit to the neighbourhood that new life should thus be put into an old undertaking, and it is to be hoped that Messrs. Carter & Co. may be successful in their enterprise.

Proposed Builders' Clerks' Institution.—We are asked to state that the proposed meeting at Cannon-street Hotel for this Saturday, to consider this question (as announced in a letter signed Henry Starkey, in our last issue, page 280), is postponed, as satisfactory arrangements cannot be made for that date. Moreover, Mr. Starkey now requests that all who wish to join in the movement would write, not to him as requested in his letter last week, but to Mr. Bowditch, 94, Dalburg-road, Brixton, who will give every information. While we are glad to assist the promoters of the movement by publishing this information, we must at the same time remark that all this is not very business-like, and that those concerned in the matter would have done better to systematise their arrangements more completely before making any public announcement.

LEGAL.

BRUIN *v.* WELLESLEY.

At the Leicester County Court on Tuesday last week, before His Honour Judge Wightman Wood, the case of Bruin *v.* Wellesley was tried. The plaintiff was Hardy Bruin, of Leicester, horticultural builder, trading as Hardy Bruin & Co., and the defendant was Francis Wellesley, of the Honey Pots, Westfield, Woking, the claim being £31 18s., balance of account for greenhouse, glass, and carriage of empty crates and kegs.—The defendant, who paid into Court £6 18s. on account of plaintiff's claim, together with £3 2s. 6d. for costs, also lodged a counter-claim for £25 as damages for breach of contract by the plaintiff to erect a greenhouse at the defendant's residence at Woking, and also for erecting the same in a negligent manner and with improper materials.—Mr. W. Simpson appeared on behalf of the plaintiff, and Mr. Garrett (instructed by Mr. Ernest Bevir, London) appeared for the defendant.

Evidence in support of the plaintiff's case was given by John Herbert Goodacre, head-gardener at the Earl of Harrington's Derbyshire seat, who said he had examined the greenhouse, and found that the only place where the roof leaked was a small

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*School	Llangollen CountySch. Governors	.....	Oct. 31
*Plans for Sewage	Wantage U.D.C.	Two at 25 Guineas	Nov. 16

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Brick Channelling and Granite Kerbing, Offices and Sheds, Palmerston-road, Aberdeen	Southend-on-Sea Corp.	H. Harlock	Oct. 28
Pipe Sewers, &c. Bishop Hill-road	Northern Co-op. Co Lim.	A. Mavor	Oct. 29
Sewer, St. Helen's-street	Handsworth U.D.C.	W. H. Lancashire	do.
Rebuilding Business Premises, Peter's Hill, Belfast	Hoyland Nether U.D.C	W. Farrington	do.
Rebuilding Trelissick Arch	P. & F. M'Glade	R. G. Watt	do.
Flint Road Metal, &c.	Truro Rural Highways Committee	T. Clark	do.
Houses, Petterill-street, Carlisle	Hailsham(Sussex)R.D.C	W. Wallwork	do.
Additions, &c to Station, Truro	G. W R. Co.	G. Armstrong	do.
*New Houses, &c. Ryde	Admiralty	*Official*	do.
Hotel, Seafield House, Alnmouth, Northumberland	T. Binks	do.	do.
Two Cottages, Annitaford	N. E. R. Co.	M. T. Wilson	Oct. 30
Additions to School, Wincobank	Ecclesfield School Bd.	W. Bell	do.
Street Works, Llwynpia, Glam.	Messrs. De Winton	G. A Wilson	do.
Additions, &c. to St. Mary's National Schools, Monmouth		Griffiths & Jones	do.
Rebuilding 59, North Parade, Aberystwith	R. Griffiths	G. E. Halliday	do.
Granite Road Metal	Barnet U.D.C.	J. A. Jones	Oct. 31
*Extension of Fitting Shop, Holbeck	M. R. Co.	*Official*	do.
Theatre and Hotel, Gateshead	Weldon, Watts, & Co.	do.	Nov. 1
School and Walls, Pool, Cornwall	Illogan School Board	W. Hope	do.
Schools (Keenan Memorial), Bramley, Leeds		S. Hill	Nov. 2
Street Works, near Burnley	Brierfield U.D.C.	Kay & Twist	do.
Additions to Upper School, Rhymney, Wales	Bedwellty Sch. Bd.	*Official*	do.
Waterworks	Merthyr Tydfil U.D.C.	James & Morgan	Nov. 4
School, Bynea	Llanelly Sch. Bd.	G. F. Deacon	do.
Re-building Farmhouse, Brockholes, Mixenden, near Halifax	Booth Town Charity Trust	J. B. Morgan	do.
Asylum Buildings, Cotford, Wells, Somerset		Jackson & Fox	do.
		Giles, Gough,& Trollope	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered
House, Tullich, Ballater, N.B.		Matthews & Mackenzie	Nov. 4
*Works at Cemetery	Acton District Council	D. J. Ebbetts	Nov. 5
*Well Sinking	Belper U.D.C.	*Official*	do
Workhouse Wards	Lutterworth Union	do.	Nov. 6
Infirmary Wards, Fell-lane	Keighley Union	Judson & Moore	do.
Extension of School, Trerobart, Ynysybwl	Llanwonno Sch. Bd.	A. O. Evans	do.
House and Stabling, Mar Lodge, Braemar, N.B.		A. M. Mackenzie	Nov. 7
Wood-Paving, High-street	Chatham Corp.	C. Day	do.
*Broken Granite	Bethnal Green Vestry	F. W. Barratt	do.
*Erection of Houses, &c. Tynemouth	Admiralty	*Official*	do.
Guernsey Granite Spalls	Dartford Union	do.	Nov. 8
Paving Works, Lincoln-street, &c.	Kingsthorpe U.D.C.	J. Ingman	Nov. 9
*Broken Granite	Guildford Corp.	F. T. Maltby	Nov. 11
Street Improvements, Bond-street, Southampton		W. B. G. Bennett	do.
*Underground Conveniences	Com. of Sewers	*Official*	Nov. 12
*Sewer Work	Kensington Vestry	do.	do.
Pipe Sewer (2 240 ft.)	Croydon R D.C.	R. M. Chart	Nov. 12
Pipe Sewers (6,450 yds.)	Oxenthorpe (Yorks) U.D.C.	Barber, Hopkinson & Co.	Nov. 14
*School, Portmadoc	The Local Governing Body	W. H. Dashwood Caple	Dec 10
Thirty Houses, Starbeck, Harrogate	J. Aliport	G. Bland	No date
*Erection of Houses, Harrow		Basil Slade	do.
Six Bazaar Stalls, and Passage, Audenshaw, Lancs.	Rev. A. C. Bulkeley		do.
Terrace House, Station Parade, Harrogate	W. Walton	H. E. & A. Bown	do.
Additions to P.M. Chapel, Rope-walk, Ipswich		T. W. Cotman	do.
Shelter and Rooms, Stamford Park, Ashton-under-Lyne		J. Eaton & Sons	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Clerk of the Works	Willesden Sch. Bd.	3*l.* 3*s.* per week	Oct 30
*Street Inspector	*Clerkenwell Vestry	2*l.* weekly	Nov. 1
*Clerk of Works	Enfield Sch Bd.	3*l.* 3*s.* weekly	Nov. 4
*Chief Electrical Engineer	Ealing U.D.C.		Nov. 4

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv., vi., viii., *&* xviii. *Public Appointments, p.* xvi.

crevice at one corner. He could not detect any draughts, and he considered the greenhouse in a very satisfactory condition.

The defendant, in his evidence, said that, owing to the ventilators not fitting, the plants were injured by the draught. The woodwork in the sides of the house cracked, and the roof was defective, allowing the rain to drip through in at least a dozen places. With the exception of the heating apparatus, he considered the greenhouse was useless.

Mr. Clamp, architect, said he had examined the house, and he did not consider it properly built. The wood was not properly seasoned, and was not so good in quality as it should have been. It was puttied, and the glass was not of the proper size. The paint was also very unsatisfactory, and he did not consider the house was at present serviceable.

Mr. Garrett contended that the greenhouse was jerry-built, and almost useless.

His Honour held that there had been no breach of contract when reasonable allowance was made for the puffing that a dealer was allowed to indulge in when advertising his wares. Judgment for plaintiff, with costs on the claim, and the counter-claim was disallowed.

MEETINGS.

FRIDAY, OCTOBER 25.

Architectural Association.—Annual Conversazione, King's Hall, Holborn Restaurant. 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. A. Hill on "Diseases of Animals in Relation to Meat-supply: Characteristics of Vegetables, Fish, &c., unfit for Food." 8 p.m.

SATURDAY, OCTOBER 26.

Sanitary Institute (Lectures for Sanitary Officers).—Inspection of Richmond Main Sewerage, Mortlake.

London and Provincial Builders' Foremen's Association.—Quarterly Meeting, Memorial Hall, Farringdon-road, E.C. 7.30 p.m.

Proposed Plymouth Branch of Devon and Exeter Architectural Society.—Special Meeting at Plymouth Athenæum. 11.30 a.m.

London County Council, Technical Education Board.—(The Study of Architecture).—Mr. W. R. Lethaby will give two lectures at the Central Art Department of the Board, Bolt-court, Fleet-street, E.C., on Saturday, October 26, and Saturday, November 2, at 3.30 p.m., on "Modern Building Design." The lectures will be addressed specially to architects and architects' pupils. Admission free.

TUESDAY, OCTOBER 29.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. E. C. Seaton on "Infectious Diseases and Methods of Disinfection." 8 p.m.

Royal Victoria Hall (Waterloo Bridge-road).—Mr. H. B. Wheatley on "How London Grew." 8.30 p.m.

WEDNESDAY, OCTOBER 30.

Carpenters' Hall, London Wall.—Lectures on Building and Sanitary Construction: I. Professor T. Roger Smith on "Timber, Site, and Foundations." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Inspection and Demonstration of Disinfecting Apparatus and Model Steam Laundry, St. John's Wharf, Fulham.

FRIDAY, NOVEMBER 1.

Institution of Junior Engineers (Westminster Palace Hotel).—Presidential Address by Mr. Archibald Denny, of Dumbarton.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. C. H. Cooper on "Principles of Calculating Areas, Cubic Space, &c.: Interpretation of Plans and Sections to Scale." 8 p.m.

SATURDAY, NOVEMBER 2.

London County Council, Technical Education Board.—(The Study of Architecture).—Mr. W. R. Lethaby's second lecture on "Modern Building Design," at the Central Art Department of the Board, Bolt-court, Fleet-street. 3.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Inspection of Express Dairy Company's Farm, College Farm, Finchley. 3 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

17,238.—WATER-CLOSETS: *J. Spear.*—This patent relates to a device for regulating the pressure, and preventing the inrush of water to closet-cisterns which usually produces an unpleasant noise after flushing. To effect the improvement a metal vessel divided into three compartments is interposed between the supply pipe and tank. The first division is fixed some two inches from the inlet-water pipe and bored with a small hole through which the water rushes to the other divisions, which are perforated more or less, according to the pressure, and thus regulate the flow to the cistern.

17,486.—PRESERVING WOOD: *J. Matthews.*—A composition for preserving wood, which consists of a mixture in various proportions of coal-tar, resin, pine-tar, camphor-gum, sulphur, tallow, carbolic acid, arsenic, phosphorus, borax, oil rhodium, bichloride of mercury. cobalt, ground poke-root bark, ether and mineral dust made in the form of a paint or paste.

18,793.—WINDOWS; *H. Kerr.*—The sash-frames, according to this invention, are arranged to swivel inwards on hinges provided at their lower ends, and slide up or down on bars which run in grooves made in the fixed frame. A fastening device is provided for securing the sliding sash-frames to the bars, and other modifications are mentioned, including a ventilating chamber near the upper part of the window.

21,275.—SEWERS: *T. Vercoe.*—Dispensing with bricks for sewers and constructing such sewers in sections, each section being built up from segmental lengths of glazed stoneware, the meeting edges of which are so shaped as to fit into one another, and with the aid of cement, form fluid-tight joints.

21,543.—WATER-CLOSETS: *E. Lefevre.*—Relates to the employment of an automatic regulator-valve, which enables the basin of the closet to be supplied with water direct from the water-pipe of the town, so that the pressure in this pipe may be utilised. Two clock-valves, or discs, on the same rod and bearing alternately in a contrary direction against a single seat, are arranged in a cylinder having an inlet and an outlet-pipe for the flushing-water. One of the clock-valves acts as a piston, and has a chamber above it, into which air is introduced by means of a cock. The apparatus is conveniently fixed between the supply-pipe and basin, and is actuated by the pressure on the closet-seat when in use.

21,943.—ROOFING TILES: *G. Krebs.*—Deals with tiles and methods of manufacturing same. The tiles are formed of cement, and have overlapping ledges, provided with projections and depressions, so that, when they are placed in position, a mortice-joint is formed. A strip of metal or felt is also employed for closing the joints between the flattened corners. A suitable press for moulding the tiles is claimed.

21,971.—FIREPLACES: *E. Shorland.*—The grate surface of stoves and fireplaces is formed of a convex or arched shape across and inclined from the back towards the front. Air-inlets at the sides and back are of a tapering form, and fitted with converging plates for heating the air-currents. An improved flue of an oval shape in cross-section is also provided, and furnished with foot-plate and successive manhole-doors, so arranged as to keep the foot-plate cool.

10,862.—FLOORS, &C.: *T. Jarrett.*—This improved method of construction may be applied to floors, ceilings, and walls. It provides undercut surfaces for the secure fixing of tiles or plaster. Ordinary joists are used for supporting cement slabs formed with undercut surfaces, and with their ends moulded to the outline of the flanges of the joists. The slabs are then levelled, and secured ready to receive tiles and the like.

13,452.—BRICKS: *J. Wagstaff.*—The bricks, or building blocks, are provided, some with dovetail projections, and others with corresponding recesses for receiving same. There are also projecting studs, and holes for receiving such, on the upper and lower side respectively of each brick.

NEW APPLICATIONS FOR LETTERS PATENT.

OCTOBER 7.—18,728, W. Johnson, Thumb-latch Door Handle.—18,732, A. Malcolm, Kitchen Boiler Safety Test Cock.—18,751, L. Rundle, Flooring of Stables.

OCTOBER 8.—18,809, J. Love, Melting or Heating of Glue, &c.—18,828, J. Duncan, Combined Try and Bevel Squares.—18,842, F. Golby, Fireproof Rafters and Lathing for Buildings.—18,847, H. Cheffins, Grinding and Mixing Materials for the Manufacture of Portland Cement.—18,861, G. Clatworthy, Lead and Composition Pipes.

OCTOBER 9.—18,893, A. Mountain, Joints for Socketed Earthenware and other Sanitary Pipes, &c.—18,936, A. Boulton, Mortars or Cement.—18,949, J. Mills, Junior Clamps or Holders for Lines.—18,960, P. Rohne, Clamps for Lines.

OCTOBER 10.—18,967, F. Brook, Pipes for Sewage, &c.—18,969, W. Macilwraith, Self-acting Band-Saw Guide.—18,979, H. Roberts, Flushing Cisterns.—19,064, A. Hague, Sliding Door Hangers.

OCTOBER 11.—19,101, A. Gosling, Artificial Stone.—19,106, A. Morrison, Weather Bars or Draught Excluders for Doors.—19,114, W. John, Pug Mills.—19,126, C. Guckock, Bricks.

OCTOBER 12.—19,159, D. McCulloch, Supplying Baths, &c.—19,167, W. Edgar, Windows.—19,172, P. Willis, Fire Grates.—19,175, B. Fox, Window Fasteners, &c.—19,194, J. Long, Seats of Water-closets.

PROVISIONAL SPECIFICATIONS ACCEPTED.

14,479, L. Clement, Non-slipping Kentish Ragstone and Bitumen Road-paving and Flooring.—14,538, F. Borland and R. Gould, Pot or Cowl and Down-draught Preventer and Ventilator, &c.—15,333, C. Bush, Roofing Tiles.—15,440, G. Wright, Scaffolds, &c.—16,802, W. Coke, Stoneware, Earthenware, &c. — 17,172, F. Stephens, Window-sash Fasteners. — 17,173, A. Shaw, Lavatory Basins.—17,755, H. Woodford, Plane-irons and other Edge Tools.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

19,553, H. Harvey and J. Unwin, Sash-fasteners and Safety-catches. — 19,856, E. Youell, Wood Moulding Machine.—12,243, L. Klippert and the Union Fabrik Chemischer Producte, Drying Kilns.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

OCTOBER 1.—By *W. N. Lewenden & Son* (at Hull): "Westfield Farm," Swanland, Yorks., 199½ a., f., 6,500*l.*

OCTOBER 4.—By *Walton & Lee* (at Carlisle): Tarn Lodge and Farm, Castle Carrock, Cumberland, and an enclosure of land, 304 a. 1 r. 15 p., f. (including timber), 4,500*l.*; two enclosures of land, 28 a. 3 r. 33 p., f., 840*l.*; "Castle Carrock Farm," 41 a. 0 r. 2 p., f. (including timber), 1,510*l.*; an enclosure of land, 21 a. 1 r. 28 p., f., 30*l.*

OCTOBER 7.—By *Watson & Son* (at Darlington): "Dairy Farm," Middleton St. George, Durham, and four enclosures of land, 101 a. 1 r. 9 p., f., 3,612*l.*; "Low Middleton Hall" and Farm, 144 a. 0 r. 17 p., f., 5,600*l.*; "High Scrogg's Farm,' 49 a. 3 r. 22 p., f., 1,210*l.*

OCTOBER 8.—By *Vinten & Son* (at Ramsgate): "Alva Lodge, Westwood, Broadstairs, and 14 a. 3 r. 25 p., f., 1,500*l.*; a freehold house and an enclosure of land, Rumfield's Gap, 8¾ a., 1,600*l.*—By *W. H. & J. A. Eadon* (at Sheffield): a freehold residence, Fulwood, Sheffield, Yorks., 2,950*l.*

OCTOBER 9. — By *Henry Manley* (at Wrenbury): Two freehold houses, Aston, Cheshire, cottages and enclosure of land, 33 a. 1 r. 20 p., 2,500*l.*; two houses and cottages, 9 a. 3 r. 23 p., f., 1,115*l.*; houses, cottages, shop, and enclosures of land, Newhall, Cheshire, 30 a. 2 r. 31 p., f., 3,485*l.*; house, smithy, and enclosures, Newhall Mill, 42. 1 r. 37 p., f., 670*l.*; 3 enclosures of land, Wrenbury, Cheshire, and 2 cottages, 21 a. 1 r. 23 p., f., 1,420*l.*—By *Fuller, Moon, & Fuller* (at Epsom): The Worcester-pk. Potteries, Cheam, Surrey, and 3 acres, including the goodwill, f., 900*l.*

OCTOBER 10.—By *Farebrother, Ellis, Clark, & Co.* (at Worthing): Hill Barn, Durrington, Sussex, and enclosures of land, 62 a. 0 r. 14 p., f. and c., 1,050*l.*; a freehold house and enclosures of land, 50 acres, 1,900*l.*—By *R. W. Fuller, Moon, & Fuller* (at Croydon): 5, St. Andrew's-rd., Croydon, f., r. 20*l.* 16s., 410*l.*; 56, 58, and 60, Addington-rd., u.t. 69 yrs., g r. 8*l.* 2s., 405*l.*; 5 to 12, Anchor-pl, f., 750*l.*; 26, West-st., f., r. 31*l.* 4s., 410*l.*; 45 to 49, West-st., f., 900*l.*; f.g.r. of 21*l.*, West-st., reversion in 57 yrs., 555*l.*; 1, Parker-rd., f., r. 26*l.*, 385*l.*; 5 to 14, Hill-st, f., 580*l.*; 2, 3, and 5, Hill-pl., f., 250*l.*; 1 and 2, Running Horse Hill, f., 295*l.*; 88 to 94 (even), South End, f., r. 83*l.* 3s., 1,335*l.*; f.g.r. of 6*l.*, Cliff-rd., reversion in 964 yrs., 170*l.*; 19 and 21, Selsdon-rd., u.t. 64 yrs., g.r. 10*l.*, 755*l.*; a profit rental of 49*l.*, 10s., Selsdon-rd., u t. 65 yrs., 1,020*l.*; f.g.r. of 10*l.*, Godstone-rd., Purley, reversion in 74 yrs., 275*l.*; 1 to 29, Bartlett's Cottages, f, 5,360*l.*

[Contractions used in these Lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I.	load	10/0/0 16/0/0
Fenoula, U.S. ft. cu		1/7 1/10
Ash, Canada	load	3/0/0 4/5/0
Birch, do.		2/0/0 3/5/0
Elm, do.		3/15/0 5/0/0
Fir, Dantsic, &c.		2/0/0 3/10/0
Oak, do.		2/15/0 4/15/0
Canada		6/5/0 7/15/0
Pine, Canada red		0/0/0 0/0/0
Do. Yellow		2/10/0 4/15/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg		5/0/0 6/10/0
Wainscot, Riga, &c., log		2/15/0 5/0/0
Odessa, crown		2/15/0 5/0/0
Deals, Finland 3rd & 1st std 100		7/0/0 8/10/0
Do. 4th & 3rd		7/0/0 8/0/0
Do. Riga		7/0/0 8/0/0
St. Petersburg, 1st yellow		9/0/0 12/0/0
Do. 2nd yellow		7/10/0 9/0/0
Do. white		8/0/0 9/10/0
Swedish		7/0/0 15/10/0
White Sea		7/5/0 14/0/0
Canada, Pine 1st		21/0/0 24/0/0
Do. do. 2nd		15/0/0 17/0/0
Do. do. 3rd, &c.		8/0/0 10/0/0
Do. Spruce, 1st		9/0/0 10/10/0
Do. do. 3rd and 2nd		6/10/0 7/10/0
New Brunswick		6/0/0 7/0/0
Battens, all kinds		5/0/0 21/0/0
Flooring boards, 1st, 1 in. prep.		0/9/6 0/14/6
Do. 2nd		0/6/6 0/11/6
Other qualities—		0/4/6 0/7/6
Cedar, Cuba ..ft.		3½ /4½
Honduras, &c.		3½ /4½
Mahogany, Cuba		3 /6
St. Domingo, cargo av.		3 1/0
Mexican do. do.		3 /4
Tobasco do. do.		3½ /6
Honduras do.		3½ /5½
Box, Turkey	ton	4/0/0 15/0/0
Rose, Rio		7/0/0 15/0/0
Bahia		6/0/0 15/0/0
Satin, St. Domingo		0/0/5 0/1/0

TIMBER *(continued)*.		
Satin, Porto Rico		0/0/6 0/1/6
Walnut, Italian		0/0/3 0/0/7

METALS.		
Iron—Pig, in Scotland	ton	2/7.2½ 0/0/0
Bar, Welsh, in London		5/12/6 5/15/0
Do. do. at works in Wales		5/2/6 5/5/0
Do. Staffordshire, in London		6/0/0 6/10/0
COPPER—British cake and ingot		49/0/0 49/10/0
Best selected		50/0/0 50/10/0
Sheets, strong		56/0/0 0/0/0
Chili bars		45/10/0 45/15/0
YELLOW METAL		0/0/4 9-16 0/0/4⅝
LEAD—Pig, Spanish	ton	11 6'3 11/7.6
English com. brands		11/10/0 0/0/0
Sheet, English, 6 lbs. per sq. ft. and upwards		12/5/0 12 7 6
Pipe		12/10/0 0/0/0
ZINC—English sheet	ton	18/5 0 18/10/0
Vieille Montagne		18/15'0 0/0/0
TIN—Straits		65/7/6 65/17/6
Australian		66/7/6 66/17/6
English Ingots		68/10/0 69/0/0
Banca		66/0/0 66/5/0
Billiton		65/0/0 65/10/0

OILS.		
Linseed	ton	20/5/0 20/15/0
Cocoanut, Cochin		25/0/0 0/0/0
Do. Ceylon		22 15/0 0 0/0
Palm, Lagos		23/10/0 0/0/0
Rapeseed, English pale		23'0/0 23'5/0
Do. brown		21/10/0 21/15/0
Cottonseed ref.		17/0/0 17/10/0
Oleine		19/10/0 20/10/0
Lubricating, U.S.		5/6/0 8/0/0
Do. black		4/0/0 6 6/0
TAR—Stockholm	barrel	0/19/6 0/0/0
Archangel		0/15 0 0 0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender.]

ABERTILLERY.—For the erection of hotel, stables, &c., Abertillery, for Messrs. Webb, Aberbeeg. Messrs. Swash & Bain, architects, Newport, Mon.:—

N. Bagley	£4,265 18 10	D. C. Jones & Co.	£3,586 0 0
J. C. Richards	4,208 6 0	J. Jenkins	3,525 0 0
Chas. Edwards	4,103 0 0	C. H. Reed	3,510 0 0
Hatherley & Carr	3 887 0 0	J. Linton	3,495 0 0
J. D. Williams	3 830 0 0	D. Lewis	3,445 0 0
A. P. Williams	3,760 0 0	Gaen Bros.	3,422 10 0

ANGLESEY (N. Wales).—For the erection of school buildings and residence, Llangoed, for the School Board. Mr. R. G. Davies, architect, 220, High-street, Bangor:—

House and School.

W. Jones	£2,190 0 0	D. Owen, Glyn. Garth, Menai Bridge*	£1,783 10 0
E. Williams	2,148 0 0		
R. & J. Williams	2,129 0 0		

Boundary Walls.

D. Owen	£99 0 0
H. Jones, Penchwarel, Llangoed*	98 16 0

* Accepted.

BRADFORD-ON-AVON.—For the erection of technical school buildings, for the Technical Education Committee. Mr. T. B. Silcock, architect, Octagon Chambers, Milsom-street, Bath. Quantities by Mr. Alfred Amor, Bath:—

Downing & Rudman	£3,773 0	Erwood Bros.	£2,948 0
W. Webb	3,490 0	J. Long & Sons	2 637 0
James Burgess	3,132 8	E. Chancellor, Tiverton, Bath (accepted)	2,569 0
Hayward & Wooster	3,099 0		

For Boundary Walls, &c.

Downing & Rudman	£447 0	James Burgess	£336 7
W. Webb	387 0	Long & Sons	332 0
Erwood Bros.	335 0	Chancellor	3-5 11
Hayward & Wooster	383 0		

BUILTH (Breconshire).—For street improvements in providing and laying, curbing, channelling, and "Victoria" stone paving, for the Urban District Council. Mr. Telfer Smith, Town Surveyor. Quantities by Surveyor:—

D. Thomas	£931 8 6	J. M. Jones, Builth*	£801 1 7
Thos. Jones	828 11 9		

* Accepted.

FILEY.—For erection of two houses at Filey. Mr. Samuel Dyer, architect. Quantities by Mr. Jno. Watson:—

W. Atkinson	£776 10 0	J. Thompson	£734 0 0
Thos. Petch	770 0 0	John Joram	719 6 6
J. Bastiman & Sons	762 0 0	M. H. Fell	714 10 0
Osbert Rymer	745 0 0	John Sawdon Bridlington*	630 0 0
W. Dove	745 0 0		
Francis Postill	735 0 0		

* Accepted.

FOLKESTONE.—For the erection of business premises, &c., for the Silver Spring Mineral Water Company, Ltd. Mr. R. Pope, architect, 72, Sandgate-road, Folkestone:—

Newman	£1,852	Tunbridge	£1 770
Denne	1,785	Petts	1.642
Webster	1,775	Franklin	1,550
Hoad	1,739	Mercer, Folkestone*	1,405
Fearon	1,707		

* Accepted.

HANLEY.—For house, shop, and premises, Stoke-road, Hanley, for Mr. W. H. Walton. Quantities by Messrs. R. Scrivener & Sons, Hanley:—

L. Price	£1,140	P. Godwin, Hanley*	£1,022
G. Ellis	1,095	W. Bennett	1,023
C. Cornes	1,085		

* Accepted.

HARROGATE.—Accepted for paving, flagging, &c., James-street, for the Corporation. Mr. S. Stead, Borough Surveyor, Municipal Offices, Harrogate. Quantities by Borough Surveyor:—David Speight, Canal Basin, Leeds £2,252 11

HARROGATE.—Accepted for the erection of a fire-engine station, &c., for the Corporation. Mr. Sam. Stead, Borough Surveyor, Municipal Offices, Harrogate:—

Building.—William Jackson, Chapel-street, Harrogate £422 0

Joinery.—Clapham & Taylor, Strawberry Dale Lodge, Harrogate 394 15

LONDON.—For alterations, additions, decorations, &c., to No. 18, Wimpole-street, W., for Mr. Murray Davis. Mr. Alexander Payne, architect, Norfolk House, Victoria Embankment, W.C.:—

D. Prosser	£2,197	S. J. Dainton & Sons	£1 688
Higgs & Hill	1 994	Hall, Beddall, & Co	1.668
John Allen & Sons	1,025	Holloway Bros.	1,649
Patman & Fotheringham	1,815	R. S. Buckeridge	1,641
R. A. Yerbury & Sons	1,870	C. F. Kearley	1,634
W. Lorgmire & Co.	1,738	Thomas Gregory & Co.*	1.594
Thomas Bryce	1,695		

* Accepted.

LONDON.—For steam-heating apparatus at the Northern Polytechnic Institute. Mr. Chas. Bell, architect, 3, Salter's Hall Court, E.C.:—

Cannon & Sons	£1,231	Wenham & Waters	£819
Rosser & Russell	910	Clarke & Sons*	761

* Accepted by the Governors.

LONDON.—For sinking a well on the site of public baths and laundry, Deptford, for the Commissioners of Baths and Washhouses. Mr. Thos. Dinwiddy, architect, Greenwich, S.E.:—

E. Timmins & Sons, Ltd.	£3,089	T. Tilley & Sons, 15, Walbrook, E.C. (accepted)	£2,645
R. D. Batchelor	3,016		

LONDON.—For the supply of 400 tons broken granite, for the Vestry of St. Mary Magdalene, Bermondsey. Mr. T. Sumner, Surveyor, Bermondsey Town Hall, Spa-road, S.E.:—

QUARRY.		s. d.	
George Le Maitre	Alderney	10	9 per ton.
Enderby Granite Co.	Leicestershire	15	0 ,,
Wm Griffiths	Guernsey	10	3 ,,
J. Mowlem & Co.	,,	11	1 ,,
W. Muir & Co.*	,,	10	3 ,,
L. Sommerfeld	,,	11	1 ,,
Cooper Bros.	Blue Scotch	11	0 ,,
A. & F. Manuelle	Guernsey	11	2 ,,
R. L. & J. Fenning	,,	11	6 ,,
J. L. Lyon & Co.	Basalt on the Rhine.	9	4 ,,

* Accepted.

LONDON.—For the enlargement of the Warple-way School, Wandsworth, by 336 places, for the School Board for London. Mr. T. J. Bailey, Architect:—

Lathey Bros.	£11,026	Treasure & Son	£10,045
Peacock Bros.	10,979	B. E. Nightingale	9.968
D. Charteris	10,360	G. E. Wallis & Sons	9.796
Holloway Bros.	10,119	J. & M. Patrick, Rochester*	9,628

* Recommended for acceptance by the Works Committee.

LONDON.—For erecting a school for special instruction in connexion with the Shillington-street School, Battersea, to accommodate 120 children, and for other work, for the School Board for London. Mr. T. J. Bailey, Architect:—

R. A. Yerbury & Sons	£6,977	J. Allen & Sons	£6,092
Holloway Bros.	6,362	W. Downs	6,042
D. Charteris	6,302	B. E. Nightingale	6,008
Lathey Bros.	6,231	G. E. Wallis & Sons	5,788
Holliday & Greenwood	6 254	J. Marsland, Walworth, S E.*	5,775
J. & M. Patrick	6,139		

* Recommended for acceptance by the Works Committee.

LONDON.—For the erection of a junior mixed department, to provide accommodation for 400 children, at Creek-road, Deptford, and for other work, for the School Board for London. Mr. T. J. Bailey, Architect:—

Walter Holt & Sons	£13 720	W. Downs	£10.949
B. E. Nightingale	11,774	Hart Bros	10,710
W. Gregar & Son	11,387	Atherton & Dolman	10,333
A. Reed & Son	11,182	G. E. Wallis & Sons, Maidstone*	10,139
Jas. Smith & Sons	11,157		
Jas. Longley & Co.	11,055		

* Recommended for acceptance by the Works Committee.

LONDON.—For utilising the fives court in the boys' playground of the Crampton-street School, Newington, for the construction of a Manual Centre, for the School Board for London. Mr. T. J. Bailey, Architect:—

Johnson & Co.	£734 0	W. Downs	£549 0
E. Triggs	585 10	G. Newton	511 0
Peacock Bros.	585 0	Rice & Son, Stockwell-road*	469 0
Maxwell Bros., Ltd.	576 0		
J. Garrett & Son	559 0		

* Recommended for acceptance by the Works Committee.

LONDON.—For alterations and additions to the "Prince Alfred Tavern," London Fields:—

C. Dearney & Son	£511	Spencer & Co.	£487
Barker & Stutt	496	G. Colls	458

LONDON.—Accepted for new drainage and sanitary arrangements at St. Andrew's Home for Boys, at 26, Great Peter-street, S.W.:—

F. C. Hoskins, Westminster £245

LONDON.—For the erection of three temporary iron buildings in Mill-lane, New Park-road, Brixton Hill, for the School Board for London. Mr. T. J. Bailey, Architect:—

T. Cruwys	£2,300 0 0	Isaac Dixon & Co.	£1,763 16 0
E. C. & J. Keay, Ltd.	2 037 0 0	Humphreys, Ltd	1,675 0 0
Cleggon & Co., Ltd.	1,825 0 0	W. Harbrow, South Bermondsey*	1,548 14 6

* Recommended for acceptance by the Works Committee.

LONDON.—For sundry works to Vaccination Station and Workhouse, for the Guardians of St. George-in-the-East. Messrs. Wilson, Son, & Aldwinkle, architects:—

G. Burton & Co.	£236 13	A. Heard & Co.	£219 0
Coates	256 8	Young	210 0
Vigor	235 0	Wall	209 0
Wilson	220 0	Thorne	197 3

LONDON.—Accepted for rebuilding factory, Blenheim-road, Hornsey-road, for the Executors of Mr. E. W. Clarke. Mr. E. T. Clarke, surveyor:—

A. Heard & Co. £1,450

[No competition.]

LONDON.—For the provision of a manual training centre in connexion with the Nunhead-passage School, for the School Board for London. Mr. T. J. Bailey, Architect:—

Jas. Smith & Sons	£1,923	J. Marsland	£1,633
Mid-Kent Building and Contracting Works, Ltd.	1,798	J. Garrett & Son	1.6 9
W. Downs	1.770	W. Akers & Co.	1,576
F. & H. F. Higgs	1 640	T. White & Son, Bow*	1,472

* Recommended for acceptance by the Works Committee.

LONDON.—For the erection of an additional iron building on the site in Brook Green, Chelsea, for the School Board for London. Mr. T. J. Bailey, Architect:—

E. C. & J. Keay, Ltd.	£715 0	Croggon & Co., Ltd.	£575 0
T. J. Hawkins	715 15	Humphreys, Ltd.	528 0
T. Cruwys	655 0	W. Harbrow, South Bermondsey*	486 10
Isaac Dixon & Co.	641 2		
Hill & Smith	635 0		

* Recommended for acceptance by the Works Committee.

LONDON.—For altering and refitting the offices of all departments of the Oxford Gardens School, Notting Hill, and for providing a new system of drainage, for the School Board for London. Mr. T. J. Bailey, Architect:—

R. A. Yerbury & Sons	£1,350	H. Knight & Son*	£1,120
G. Foxley	1.350	E. Triggs, Clapham*	1,082
Cowley & Drake	1,325	Vernall, Danes, & Co.	1,045

* Accepted.

LONDON.—For providing a new system of drainage for the Addington-street School, York-road, Lambeth, for making the necessary connexions with the existing troughs, and also for constructing two new water-closets for the teachers of all departments, for the School Board for London. Mr. T. J. Bailey, Architect:—

G. Foxley	£1,150	L. Whitehead & Co.	£844
Star & Son	910	J. Garrett & Son	789
Lathey Bros.	858	E. Triggs, Clapham*	691
J. Marsland	845		

* Accepted.

LONDON.—For paving works in Bailey's-lane, South Tottenham, for the School Board for London:—

Treasure & Son	£357	J. E. Bloomfield	£289
Thomas Rowley	335	G. Bell, Tottenham Wharf*	225
W. Griffiths	315		

* Accepted.

LONDON.—For the erection of a school on the site in Upper Hornsey-road, Holloway, to provide accommodation for 1,196 children, for the School Board for London. Mr. T. J. Bailey, Architect:—

R. A. Yerbury & Sons	£29,181	T. Boyce	£25,597
C. Miskin	28,696	Foster & Dicksee	25,552
W. Goodman	27,878	E. Lawrance & Sons	25,547
J. Shillitoe & Son	27,202	Kilby & Gayford	25,240
A. Reed & Son	27 144	Wm Shurmur	24,984
Hart, Bros.	26,810	J. & M. Patrick	24,870
W. M. Dabbs	26,728	Treasure & Son	24,757
L. H. & R. Roberts	26,295	J. Grover & Son	24,694
C. Cox	25,995	Atherton & Dolman Poplar*	23,628
W. Pattinson & Sons	25 682		

* Recommended for acceptance by the Works Committee.

MIDDLETON (Lancs.).—For the execution of sewage purification works, Land's End, Rhodes, for the Corporation. Mr. H. Hinnell, C.E., 15, Mawdsley-street, Bolton:—

E. Henthorne, Broad-street, Pendleton (at per schedule of prices).

MIDDLETON (Lancs.)—For the construction of sewer, &c., (Contract No. 1), for the Corporation. Mr. Leonard Hinnell, C.E., 15, Mawdsley-street, Bolton:—

J. Ainscouth, Townfield, Oldham (at per schedule of prices).

NEW BROMPTON (Kent).—For erecting three villa-residences at New Brompton, for Mrs. E. W. Owen, of Brighton. Mr. Ernest J. Hammond, architect, New Brompton:—

For Two Villas in Windsor-road.

Horscroft & Mills	£720 0	Weymouth & Smith	£594 0
A. W. Jordan	650 0	C. E. Skinner	573 0
G. E. D. Woollard	620 10	H. E. Philips, New Brompton*	560 0
H. Harris	622 0	E. W. Filley†	525 0
F. Hammond	596 0		

For Villa in Balmoral-road.

G. E. D. Woollard	£976 10	H. Harris	£710 0
A. W. Jordan	931 0	F. Hammond	725 0
Horscroft & Mills	790 0	H. E. Philips, New Brompton*	585 0
Weymouth & Smith	776 0	E. W. Filley†	450 0
C. E. Skinner	728 0		

* Accepted.

† Withdrawn.

NORTHAMPTON.—For the supply and delivery of twenty miles of drain-pipes, for the Corporation. Mr. W. D. Gibbons, Borough Engineer, Northampton:—

J. Wills & Co. agents for Moira Pipe Co., Northampton ..... 4 in. £2 14 6 per 1,000
,, ,, ,, ... 6 in. 4 6 6 ,, ,,

PURLEY (Surrey).—For the erection of a pair of villa-residences at Purley. Mr. John Jas. Downes, architect, 11, The Parade, Lewisham High-road, S.E. :—

Steer	£2,718	Lorden & Son.....	£2,405
Bryant & Cheesman.....	2,410	Bulled & Co.	2,050

SOUTHAMPTON (Hants.). — For roadmaking, fencing, and drainage works, Hollybrook Estate, Winchester-road, Shirley, for the County of Hants Land and Building Society, Ltd. Mr. W. Burrough Hill, surveyor, 62, Above Bar, Southampton :—

Roadmaking and Drainage.

Honeychurch & Co...	£510 0 0	A. Wheeler	£378 0 0
Richards	445 10 0	J. Butt	346 14 8
Porter	400 0 0	Osman	324 0 0
W. H. Saunders & Co.	394 10 0	Crook & Batten,	
Playfair & Toole	386 0 0	Southampton*.....	295 0 0

Fencing.

W. J. Fox & Co.	£180 14	Honeychurch & Co.,	
J. B. Smith & Sons.....	99 6	Southampton*.....	£80 0

* Accepted.

SOUTHAMPTON.—For rebuilding premises, No. 180, High-street, Southampton, for Mr. W. T. Morgan. Mr. William Burrough Hill, architect, Southampton :—

Henry Cawte	£2,698	H. Stevens & Co.	£2,487
Playfair & Toole	2,683	Jenkins & Sons, Bourne-	
F. Walter	2,547	mouth (accepted)	2,475
F. Osman	2,479		

WAKEFIELD.—For main drainage works, for the Wakefield Rural District Council. Mr. Frank Massie, C.E., Tetley House, Wakefield :—

	Outwood and Stanley Drainage, Contract No. 9.	Outwood Drainage, Contract No. 10.	Joint Drainage Works, Contract No. 2, Outfall Works.
	£ s. d.	£ s. d.	£ s. d.
Matthew Arundel	—	800 3 6	—
J. Bairstow	2256 18 6	859 17 7	—
H. & W. Barraclough, Brighouse	*1852 18 9	702 9 10	—
George Bell	2349 17 7	886 18 1	3235 0 10
Squire Booth, Earlsheaton....	—	*666 9 9	2596 15 6
William Doleman	—	730 0 10	2596 6 5
Garforth Bros.....	2256 1 5	858 0 2	2696 13 3
H. B. & A. F. James	2408 11 6	902 18 5	3095 6 11
Simon Johnson	—	—	2135 4 11
E. Kellett	2758 7 0	1102 0 0	2620 0 0
J. E. Nadin	2239 16 7	808 13 1	2600 0 0
J. Pullan, Beeston, nr. Leeds	1979 16 10	864 19 6	*1970 17 3
J. Schofield	—	836 8 1	2663 17 0
T. & G. Wilson	2043 4 10	756 14 3	2960 16 4
J. H. Wood	—	882 15 6	—

* Accepted.

WEYBRIDGE.—For the supply of 1,000 tons Farnham Hungry Hill flints, &c., for the Urban District Council. Mr. J. S. Crawshaw, Surveyor, Council Offices, Weybridge :—

1,000 tons of Hungry Hill flints (2-in. gauge), delivered at Weybridge Station.

	Per ton. s. d.		Per ton. s. d.
Farnham Flint, Gravel, and Sand Co.....	6 1	W. Norris, Farnham*....	5 9½
W. Harrington.....	6 1	F. H. Collins	5 3½

200 tons of Farnham Gravel Screenings.

	Per ton. s. d.
F. H. Collins	4 9
Farnham Flint, Gravel, and Sand Co., Farnham*	4 6

* Accepted.

October 17th, 1895.

To Messrs. WINSER & Co.,
52, Buckingham Palace-road, S.W.

DEAR SIRS,—We hereby beg to offer you an apology for having inadvertently sold Interceptor Traps as "Winser's," when such were not manufactured by you, and we will, in future, take care that any Traps sold by us as "Winser's" shall be those known as "Winser's Interceptor Traps," and made by you.

Yours truly,
YOUNG & MARTEN,
Stratford, E.

TO CORRESPONDENTS.

G. H.—R. H. W.—H, R. H. (amount should have been stated).

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

SUBSCRIBERS in LONDON and the SUBURBS, by prepaying at the Publishing Office, 19s. per annum (or 4s. 9d. per quarter), can ensure receiving "The Builder," by *Friday Morning's Post*.

PUBLISHER'S NOTICES.

Registered Telegraphic Address, 'THE BUILDER,' LONDON.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under ..... 4s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

Terms for series of Trade advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c., may be obtained on application to the Publisher.

SITUATIONS WANTED.

FOUR Lines (about thirty words) or under..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.
PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps *must not* be sent, but all small sums should be remitted by Cash in Registered Letter or by Postal Orders, payable to DOUGLAS FOURDRINIER, and addressed to the Publisher of "THE BUILDER," No. 46, Catherine-street, W.C.

Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the front Page should be in by TWELVE noon on WEDNESDAY.

SPECIAL.—ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before 10 a.m. on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

PERSONS Advertising in "The Builder," may have *Replies addressed to the Office*, 46, Catherine-street, Covent Garden, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES, { NINEPENCE EACH. By Post (carefully packed), 1s.

W. H. Lascelles & Co.,

121, BUNHILL ROW, LONDON, E.C.

Telephone No. 270.

HIGH-CLASS JOINERY,
LASCELLES' CONCRETE

Architects' Designs are carried out with the greatest care.

CONSERVATORIES,
GREENHOUSES,
WOODEN BUILDINGS,
Bank, Office, & Shop Fittings.
CHURCH BENCHES & PULPITS.

ESTIMATES GIVEN ON APPLICATION.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied DIRECT from the Office to residences in any part of the United Kingdom, at the rate of 19s. per annum PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, &c., 26s. per annum. Remittances payable to DOUGLAS FOURDRINIER) should be addressed to the publisher of "THE BUILDER,' No. 46, Catherine-street W.C.

THE BATH STONE FIRMS, Ltd.

BATH,
FOR ALL THE PROVED KINDS OF
BATH STONE.
FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

DOULTING STONE.

CHARLES TRASK & SONS,
(THE DOULTING STONE COMPANY),
DOULTING, SHEPTON-MALLET.
London Agent:
E. A. WILLIAMS, 16, Craven-st., Strand, W.C.

HAM HILL STONE.

The attention of Architects is specially invited to the durability and beautiful COLOUR of this material. Quarries well opened. Quick despatch guaranteed. Stonework delivered and fixed complete. Samples and estimates free. Address, The Ham Hill Stone Co., Norton, Stoke-under-Ham, Somerset. London Agent: Mr. E. A. Williams, 16, Craven-st., Strand, W.C. [ADVT.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 45, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.

SPRAGUE & CO.

LITHOGRAPHERS AND PRINTERS.

Estate Plans and Particulars of Sale promptly executed.

4 & 5, East Harding-st., Fetter-lane, E.C. [ADVT.

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch.

METCHIM & SON, 20, Parliament-st. S.W.

"QUANTITY SURVEYORS' TABLES,"

For 1895 price 6d. post 7d. In leather 1/- Post 1/1 [ADVT.

PILKINGTON & CO

(ESTABLISHED 1838),
MONUMENT CHAMBERS,
KING WILLIAM STREET, LONDON, E.C.

Registered Trade Mark,

Polonceau Asphalte.

PATENT ASPHALTE and FELT ROOFING.
ACID-RESISTING ASPHALTE.
WHITE SILICA PAVING.
SEYSSEL ASPHALTE.

THE "E.R.A." PHOTO BLOCK COMPANY,

CITY OFFICE: 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

HALF-TONE BLOCKS

Prepared from Water Colour or Pencil Drawings or Photographs, to print with type, on an entirely new method, by which the Cross-bar grain is dispensed with, giving greater brilliancy to the picture, and more definition of detail.

For Particulars and Specimens apply to ALFRED FISH, Manager.

895.

ON.

S, Ltd

OF

roofing,

ls.

NE.

ALLS

nd, W.C

specially

COLOUR

. Quick

delivered

nates free.

on, Stoke

Mr. E. A.

[ADVT.

llis Law

Office, 42,

terials for

se floors,

k-rooms,

Asphalte

[ADVT.

TERS.

promptly

. [ADVT.

APHED

et, S.W.

LES,

h [ADVT.

& CO

E.C.

alte.

OFING.

PAVING,

NY,

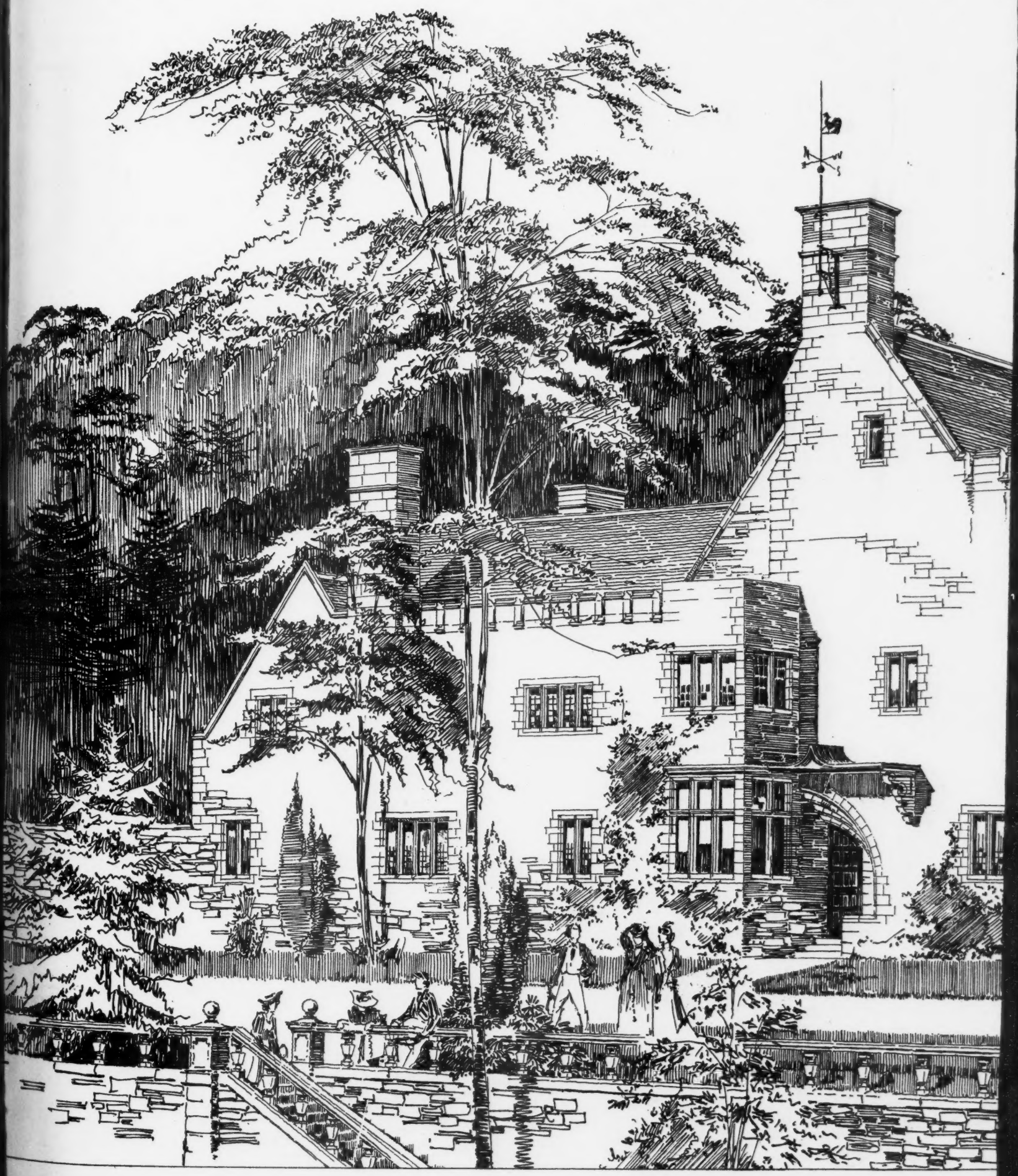
s

print

in is

ition

er.



"TEITH VIEW," NEAR DOUNE, N.B.—MESSRS. NIVEN &

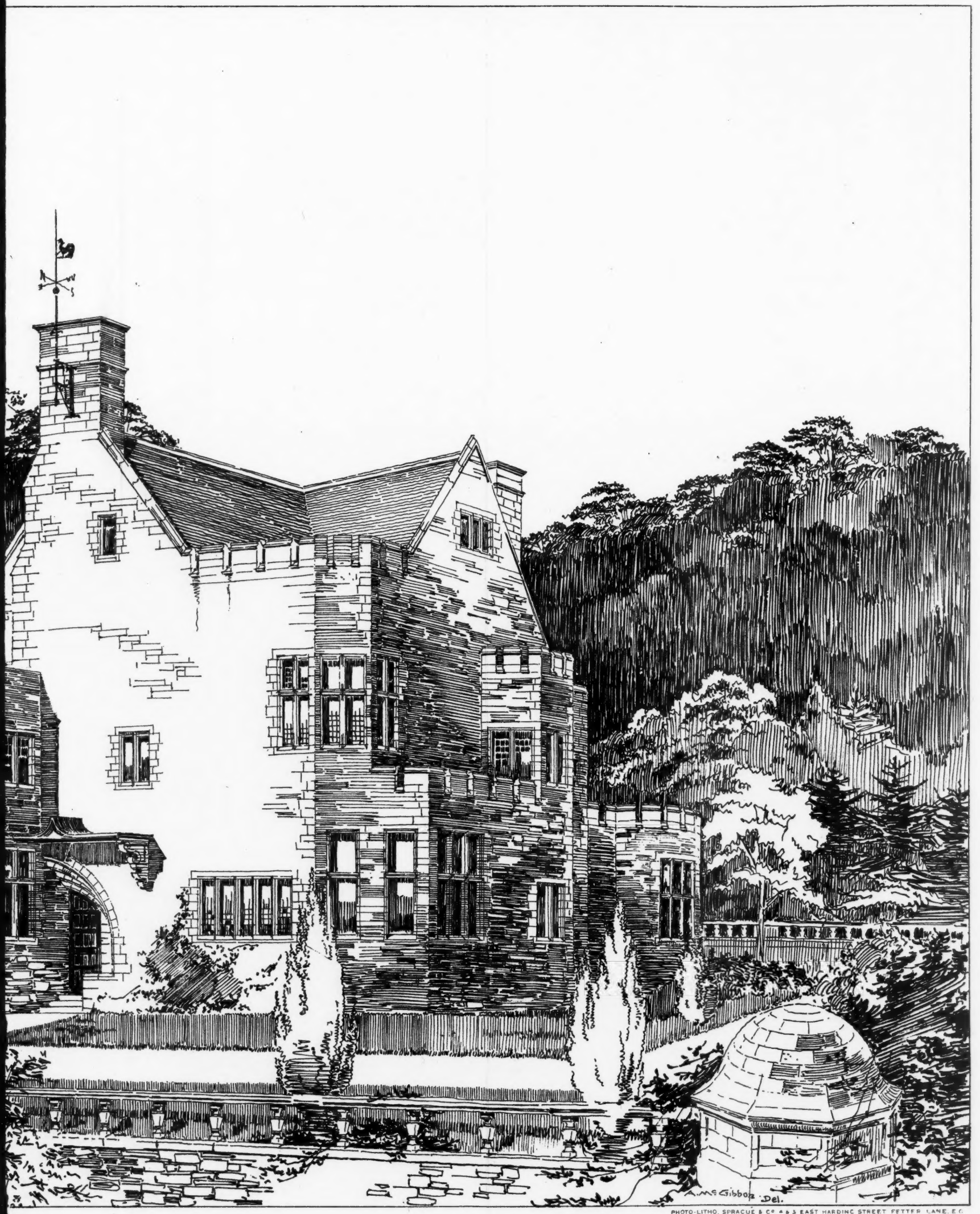
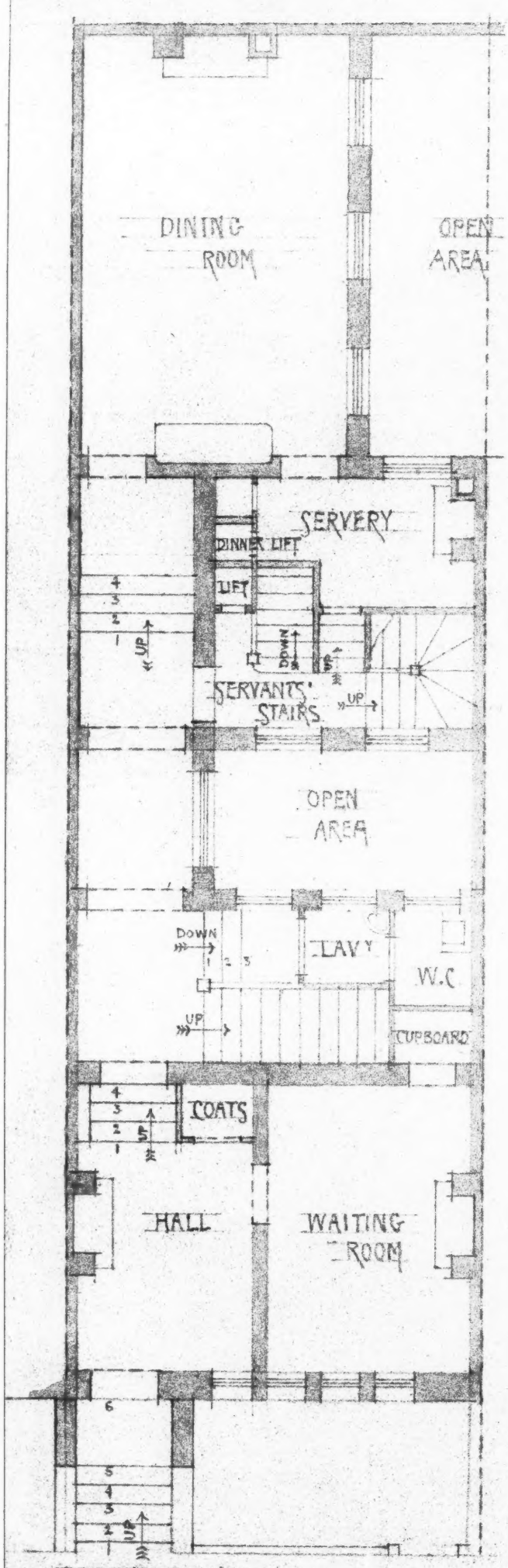
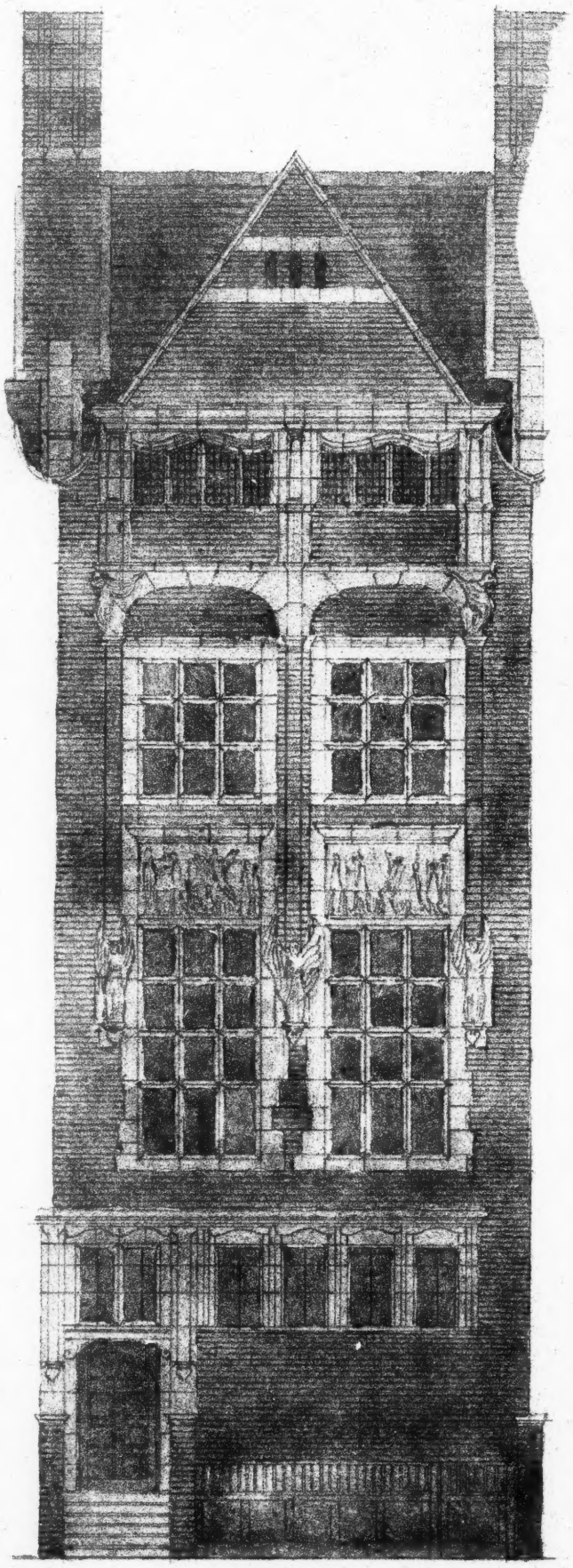


PHOTO-LITHO. SPRAGUE & Co 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

R DOUNE, N.B.—MESSRS. NIVEN & WIGGLESWORTH, ARCHITECTS.



GROUND PLAN



FRONT ELEVATION

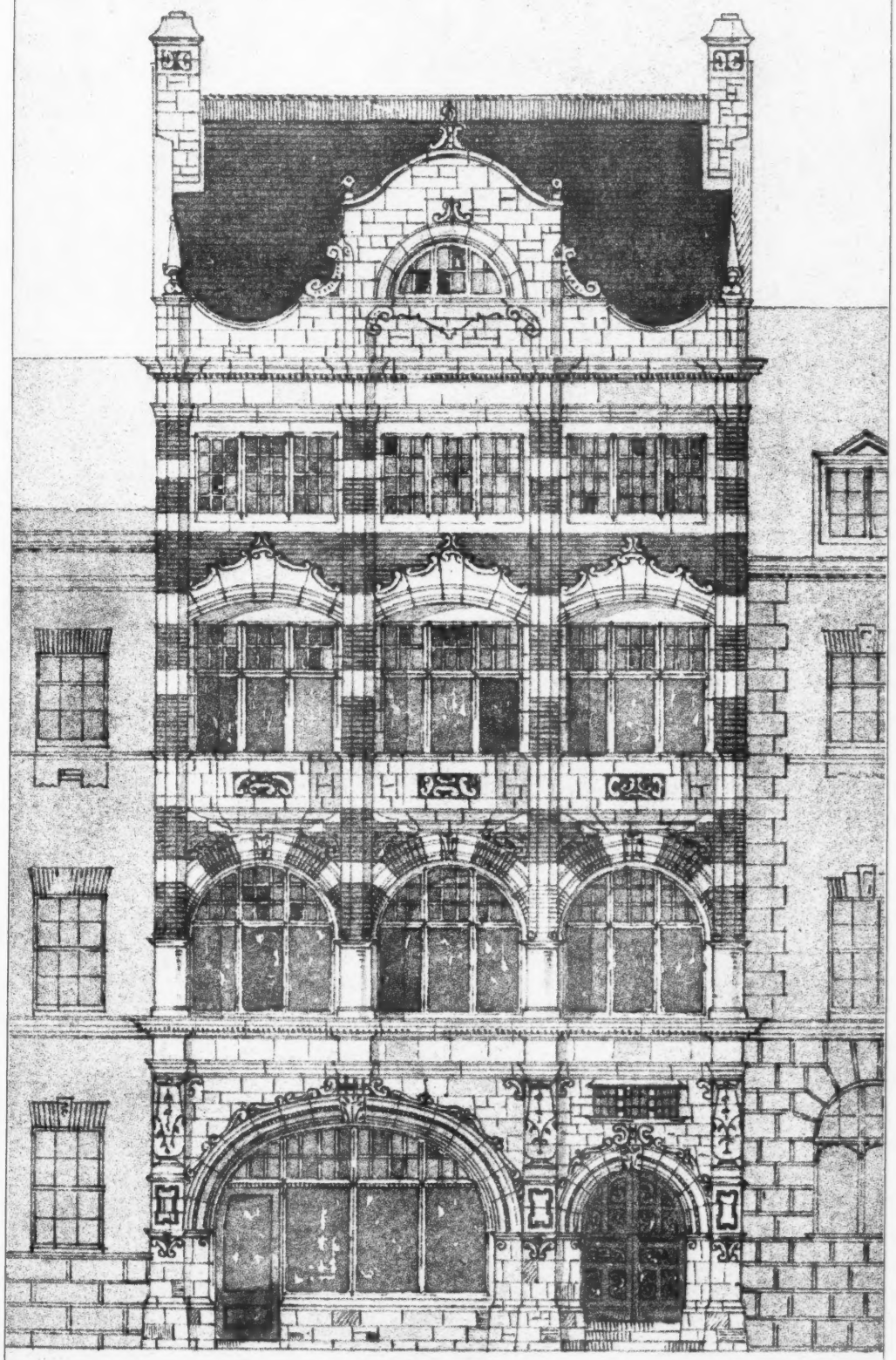
A SMALL TOWN HOUSE

Herbert F. J. Cooper
Tenant St. del.

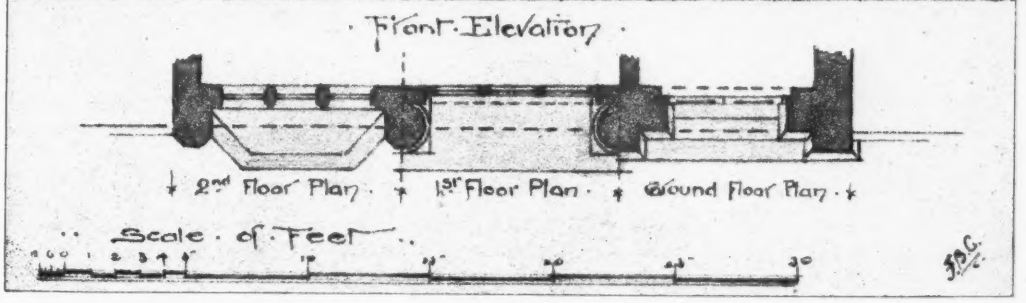
INK-PHOTO. SPRAGUE & Co 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

Proposed Business Premises

Frank B. Cooper, Architect. 1894



Front Elevation



INK-PHOTO. SPRAGUE & Co 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.